The Milbank Memorial Fund

QUARTERLY

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Vol. XIII JANUARY, 1935 No. 1

Published by the MILBANK MEMORIAL FUND, 40 Wall Street, New York
Printed in the U. S. A.

dr. Milbank memorial fund
4-7-38.
v. 13, nos 1-2

HEALTH WORK OF THE LEAGUE OF NATIONS[1]

by FRANK G. BOUDREAU, M.D.

THE August (1934) session of the Council of the League of Nations is about to open. The President calls the meeting to order and asks the Representative of Denmark to present his report of the work of the Health Organisation. This as a rule occasions little debate, for the importance of international cooperation in health work is now generally recognised by the States—Members of the League. The report of the Danish Representative is adopted and the Council passes on to other subjects.

A little later on in the year the Second Committee of the 1934 Assembly meets in another room of the same building. The Honourable Mr. Bennet, Prime Minister of Canada, is in the chair and the Committee is about to discuss the health work of the League. Delegates of a dozen Governments take part, commenting on the progress achieved since the last Assembly, proposing new tasks for the Health Organisation, occasionally voicing mild criticism, and sometimes offering special facilities in their own countries for some type of international health work. When the list of speakers is exhausted a delegate previously selected for the purpose sums up the debate and is requested to present the report of the Committee to the Assembly in plenary session.

In the Fourth Committee of the Assembly, Count Carton de Wiart of Belgium is in the chair. The Committee, which deals with the finances of the League, has arrived at the health chapter of the 1935 budget. This is made up of three parts: the first concerns the funds which the League itself devotes to the Health Organisation; the second is a distribution of the Rockefeller Foundation grant, and this year it also includes a grant from the Milbank Memorial Fund. The third part is the budget of

[1]From the office of the Health Section of the League of Nations.

the League's Eastern Health Bureau at Singapore, made up of grants from the League's budget and special contributions from a number of Far-Eastern Governments. No voice is raised when the Chairman asks for comments and in this case silence denotes approval. In previous years, during the worst periods of the economic depression, the health budget was reduced by the Assembly in common with the budgets of other League organisations.

I have given some indication of the Health Organisation's relationship to the Assembly and Council, two of the three important organs of the League. The Health Section, or Secretariat, of the Health Organisation (which has also a Health Committee and an Advisory Council) is an integral part of the third, the general Secretariat, being one of the latter's three technical sections. The other sections are concerned with economic and financial questions and with matters affecting international transport and communication.

There is another intergovernmental organisation at Geneva which is also concerned with health. The International Labour Office, of which the United States of America is now a member, has sections devoted to social insurance, housing, and industrial hygiene, all of which have to do with the health and welfare of labour. The League stands for cooperation between the Governments and it is natural to look for close cooperation between the health work of the League and that of the Labour Office. That such cooperation does in reality exist is proved by the work of joint committees set up by the two bodies to deal with subjects of mutual concern.

Another intergovernmental health organisation exists at Paris, The International Office of Public Health. Its main concern is the application and periodic revision of the International Sanitary Convention, an instrument which sets out the measures to be applied to shipping (a chapter on air-navigation has been added recently) in the interests of disease prevention. Close

cooperation between this Office and the Health Organisation has been established. On subjects of interest to both, agreement is worked out in advance on the steps which each will take.

It is a far cry from 1851 when after arduous efforts the first international sanitary conference met to seek agreement on measures to prevent the spread of epidemics between States, and the present year of grace when numerous international committees meet regularly to decide on important questions of widely varying character, with the assurance that their labours will not be in vain. For although the deliberations of that first Conference lasted many months not a single Government ratified its decisions!

After this glance into the past and present it may be of interest to study the program of the Health Organisation to see what lies before it in the immediate future. A cursory examination of its past reveals that from the beginning its work has been characterised by continuity. A plan or program does not spring full-fledged into being. Rather is it a matter of gradual growth. An idea born in the mind of one man spreads to others and is shaped and moulded by the circumstances in which it is born and lives. An idea is usually the expression of a need. So it is not surprising to find that many of the items in the present program of the Health Organisation were foreshadowed by delegates to some of the early sanitary conferences. They were speaking of international health needs and these needs have continued to exist to this day. When the League took up health work in 1920, ideas which had been homeless and without opportunity to develop found a home and an opportunity at Geneva.

A new organisation working in a new field must explore the possibilities and experiment with ideas and combinations of ideas until at last it finds the right road and carries on with assurance. The Health Organisation's periodic reports show that its program has developed in exactly that way. There is evident some groping about in the early reports but during recent years

a note of confidence has crept in. These reports also show that the relationship between the health services of Governments and the Health Organisation of the League has become more real. At first the delegates to the Assembly spoke of the League's health work as of something ideal but remote. At present the note of evangelical fervor is absent and the debate has taken on a note of reality.

The work of the Health Organisation falls naturally into two divisions. First come those activities which have survived the test of years, which were started when the League's health work was first organised or soon after, and which have been influenced and moulded by changing conditions and experience. This, the permanent work of the Health Organisation, is described in succeeding paragraphs.

1. COLLECTION, ANALYSIS, AND DISSEMINATION OF INFORMATION ON HEALTH MATTERS

This refers mainly to the Service of Epidemiological Intelligence and Public Health Statistics, with headquarters at Geneva and Singapore. At Geneva current information on the prevalence and movement of infectious diseases is collected from all the Government health services. It is classified, analysed, and published in weekly, bi-monthly, and yearly bulletins as well as in multigraphed sheets appearing several times a week. The *Weekly Record* also contains the official reports of the major epidemic diseases which are received, under the terms of the International Sanitary Convention, by the International Public Health Office at Paris.

At Singapore, this service is adjusted to the greater urgency of the infectious disease situation in the Far East. There cholera, plague, smallpox, and typhus and yellow fevers constitute problems of immediate importance. If their spread from one port to another is to be prevented by the health authorities, information concerning them must be recent and exact. The health services

submit this information to Singapore at weekly or more frequent intervals, utilising the cable as a rule. The Bureau at Singapore broadcasts it by wireless in code and in clear, using for this purpose the powerful stations which Far-Eastern Governments have placed at its disposal. Some of these stations broadcast the message daily, others weekly. It is picked up regularly by the national and port health authorities and by ships at sea.

Naturally the accuracy of the data received at Geneva and Singapore depends on the efficiency of the national health services. But the very fact that this information is submitted to an international body and published for all the World to see tends to bring about improvement, and during the last twelve years it has become much more complete and exact. Moreover, in marked contrast to the position when this work was begun, there are now few places on the civilised globe from which some such information is not available.

It is impossible to appraise the value of infectious disease reports from a given country without knowing something of its social and sanitary conditions. For this reason the Health Organisation has collected the necessary information and published reports on the health services, statistical methods, and medical organisation of a series of countries.[2]

But to insure that returns of sickness and deaths from the different countries are comparable, something more is needed. It is essential that the definitions of sicknesses and causes of death shall be identical and that similar methods of classification be employed. The Health Organisation has been working for years to obtain greater international comparability of medical statistics and this work is only at its beginning. It must be carried on persistently if some day the world-wide notification of disease and of causes of death is to be relatively perfect, and

[2]A list of these and of all other publications of the Health Organization may be obtained from the League at Geneva or the World Peace Foundation, 40 Mount Vernon Street, Boston, Massachusetts.

we are to obtain some common measure of the effectiveness of public health work.

II. WORK OF THE PERMANENT TECHNICAL COMMITTEES

The most important of these are three in number, the Commission on Biological Standardisation, the Malaria Commission, and the Opium Commission.

Biological Standardisation. The Commission on Biological Standardisation seeks to obtain international agreement on the standards and units for antitoxins, sera, vitamins, serological reactions, organic extracts (thyroid, sex-hormones, et cetera), and other preparations used in medicine which are tested and standardised by biological methods. The Commission proper consists of six members but it utilises the services of experts in the different subjects with which it deals. Thus a conference of experts in vitamins met this year in London under its auspices, and adopted standards and units for vitamins A, B, C, and D. Two experts from the United States of America were present. The Standards Commission itself met in Copenhagen last August and reached agreement on standards for a number of biologicals.[8]

The international standard preparations are conserved in selected laboratories (e.g., the National Institute of Medical Research at Hampstead and the State Serum Institute at Copenhagen, et cetera) on behalf of the Health Organisation, and samples are shipped on request to national health services which in turn furnish them to the institutes concerned in their production. Or samples may be shipped to these central laboratories for comparison with the international standards. This has become a routine and has led to a higher level of therapeutic efficiency as well as to greater facility in the interpretation abroad of the results of medical treatment.

The work of the Standards Commission has won general

[8]See the printed reports of the Commission and memoranda of Professors E. Knafft-lenz and C. Prausnitz, C.H.734 and C.H.832 respectively.

approval and such biological standardisation will continue to be in the future as in the past one of the most important activities of the Health Organisation.

The Malaria Commission. The work of the Malaria Commission is perhaps the most varied and has the most universal appeal of all the Health Organisation's activities. International courses on malaria were held this year under its auspices at Rome and Singapore. They were attended by medical officers in charge of anti-malaria work in their own countries, eighteen at Rome and twenty-seven at Singapore. In each case there was a laboratory and theoretical course lasting about a month, and the teachers included distinguished anti-malaria workers from several countries. These were followed by periods of practical work in the field. Medical officers who attended the course at Singapore carried out this work in the Netherlands, East Indies, French Indo-China, and the Malay Straits. In Europe, field work has been carried out as a rule in Spain, Yugoslavia, and Italy, but this year it was restricted to the latter. The organisation of these courses was begun by the Malaria Commission in 1925 to answer the need for better trained staff to cope with this most prevalent and important of all infectious diseases.

Malaria is a protean disease, varying in its epidemiology with the country and sometimes even the district in which it occurs, so that the organisation of such international courses provides an opportunity for the student to acquire a wider knowledge of its manifestations and methods of prevention than would be otherwise possible. Moreover, only a few countries have schools of tropical medicine in which such training is available.

When the Commission first met there were many differences among its members as to the epidemiology of malaria and the best methods of prevention, based for the most part on the comparative restriction of their own experience. But in the course of visits to a number of countries where malaria prevailed

under widely varying conditions, and the study of specific problems carried out in common, these differences disappeared, and the Commission adopted a report setting out the principles which in any malarious country should govern the campaign. I do not mean that the application of the same methods in any country will give good results. The Commission's report describes how to set about organising the anti-malaria campaign, no matter what the conditions, in a scientific way so that the facts about the disease will be discovered and preventive measures applied on that basis.

Some idea of the Commission's work may be gained from the titles of certain of its recent publications: "The Therapeutics of Malaria"; "Housing and Malaria" and "Malaria in the Deltas," all to be found in the *Quarterly Bulletin* of the Health Organisation.

The Commission is carrying out an important inquiry into the world requirements for quinine. It is studying the therapeutic efficiency of the synthetic remedies (atebrin, plasmoquine, et cetera) which give promise some day of supplanting quinine, and it acts as a centre for the coordination of research into important malaria problems. On the invitation of Governments the Commission has visited, studied, and reported on the prevention of malaria in a number of countries.

The Commission itself consists of many of the leading anti-malaria workers and teachers in the world and it has an associate or corresponding membership which includes almost every worker of importance in this field.

In view of the prevalence of malaria over wide stretches of the globe and the mortality and human debility to which it gives rise, anti-malaria work will continue for some time to come to absorb a large part of the resources and personnel of the Health Organisation.

The Opium Commission. The Opium Commission carries out technical work entrusted to the League by the provisions of the

several international opium conventions. The Convention signed at Geneva in 1925, for example, entrusted to the Health Committee the duty of deciding whether given preparations containing narcotics should be brought under control or excluded from the scope of the Convention. The Commission is now engaged in working out standard methods of determining the morphine content of raw opium and the content in cocaine of coca leaves. This work has been entrusted to a group of pharmacologists who have already recommended provisionally a standard method for opium.

The Commission also furnishes technical advice to the several international organs concerned with the control of narcotics: The Advisory Committee on Traffic in Opium, the Central Opium Board, and the Supervisory Body. It is obvious that as long as traffic in narcotics remains an international problem, so long will a technical advisory organ like the Opium Commission be required.[4]

III. SYSTEM OF INTERCHANGES AND INDIVIDUAL MISSIONS

This, the third division of the Health Organisation's permanent work, came into being late in 1922. At that time the public health services, like other departments of Government, were suffering from the isolation bred of war. There was little contact between the health officers of different countries, practically no continuous exchange of information and experience, and the new Governments which were faced with the task of organising public health services were not in a position to profit from the large experience acquired in older countries. In these circumstances the Health Committee decided to organise collective study tours of health officials, inviting one or more from each of a number of countries and sending them in a group under competent direction to one or two selected countries where care-

[4]For further information on the work of the Opium Commission the reader is referred to an article on the subject in the *Quarterly Bulletin* of the Health Organization, iii, No. 1, March, 1934.

ful preparations had been made, to carry out a study of the organisation and functioning of the health services. The good results of this method became at once apparent, and it has been continued, with successive improvements in the technique, ever since.

At about the same time the system of individual missions was started. Public health authorities who desired to begin some new work or to train a medical officer for a new post applied to the Health Organisation for assistance. The latter would arrange to send that medical officer to countries where particularly good work in that field was being carried on, for varying periods of study. The requirement that every such medical officer should submit a report to the Health Organisation as well as to his health administration meant that a technical documentation of constantly increasing value was being built up at Geneva. When later on Governments began turning to the League for assistance in the organisation or reorganisation of their health services, this method of training proved particularly useful. Chinese medical officers selected for the new quarantine service were given the opportunity to spend months studying in the chief ports of the leading maritime countries. Bacteriologists who were appointed to posts for the control of biological products were enabled to study in the leading national laboratories abroad. The method is so flexible that it may be readily adapted to a variety of purposes, and it has led the Health Organisation into many new fields of work.

The aims of this system were defined as follows in 1922:

> To bring the health services of different countries into closer relationship with each other.
>
> To make comparative studies of the organisation and health legislation in different countries.
>
> To obtain the cooperation of the public health services for the purpose of obtaining agreement upon a uniform standard of public health and uniform health regulations.

Since the system was inaugurated, the Health Organisation has organised thirty-five collective study tours which involved visits to thirty-one countries by 587 health officials from sixty-one countries. One hundred and seventy-five health officials have benefited from the system of individual missions so that altogether 762 have taken part in the League's interchange system.

The international malaria courses described above were an offshoot of this system, which also gave rise to the Health Organisation's work in the field of rural hygiene. This culminated in the European Conference on Rural Hygiene at which agreement was reached on the most suitable methods of providing health protection for rural districts in Europe.

Preparations are now going forward looking towards a similar conference in the Far East where of course the problems are vastly different. Following the European Conference in 1930, the Health Organisation was entrusted with the task of coordinating the work in this field of nine institutes of hygiene in as many European countries, which undertook to carry out certain studies recommended by the Conference.

The system of interchanges lends itself readily to other branches of international health work. At present the Health Organisation is cooperating with the British and Irish health services which are engaged in a study of hospital organisation and administration with a view to the extension and improvement of their hospital systems.[5] A small group of British hospital experts is now engaged in a study of selected hospitals on the continent under the auspices of the Health Organisation. A similar group of Irish experts is at present studying in the Highlands and Islands of Scotland where a system well adapted to the special conditions obtaining there has been established. The group will proceed later to Denmark and finally to Nancy (France).

[5] See the article on the recent tendencies in the development of general hospitals in England. *Quarterly Bulletin* of the Health Organisation, iii, No. 2, June, 1934.

In the space at my disposal I can give only a summary idea of the interchange system, but I have said enough to show that it is one of the most useful instruments at the disposal of the Health Organisation. Its continuance leaves no room for doubt.

THE NON-PERMANENT ACTIVITIES OF THE HEALTH ORGANISATION

So much for the permanent activities of the Health Organisation. Some of its non-permanent work is not of lesser importance. There is, for example, the assistance sought by Governments in the organisation or reorganisation of their health services. Governments have recourse to such assistance because, through the League, they may obtain the advice and help of health experts from the most advanced countries.

Cooperation with Greece. In 1928, the Greek Government requested the League's assistance in the reorganisation of its health services. After a group of health experts appointed by the League had joined with Greek officials in a survey of the health needs and conditions of Greece, a plan of reorganisation was adopted by the Government and its application begun in 1929 with the help of the Health Organisation. Today when the cooperation with the League in this field is drawing to a close, Greece has a modern school of hygiene, some sixty of her health officers have received modern training in public health, and the Greek Government has recently enacted a law providing for the establishment of modern health centres throughout the country. Thanks to the Rockefeller Foundation, a considerable amount of valuable scientific work in the field of malaria has been done at the school of hygiene, and the Foundation has also made itself responsible for the School's Division of Sanitary Engineering.

Cooperation with China. In 1930, the Government of the Republic of China addressed a similar request to the League, asking for advice and assistance as regards port quarantine, the organisation of health services, medical education[6], hospitals,

[6] I make no further mention of medical education for consideration of it would

(Continued on page 15)

and the campaign against smallpox and cholera in the Shanghai area. Now China is operating effectively her own system of port quarantine, health centres of modern type are being organised as rapidly as circumstances permit, there is a splendid New First National Hospital at Nanking, and cholera has practically disappeared, for the time being at least, from the Shanghai area. Best of all, a central health institute has been organised at Nanking for research into health problems in China and for training the staff so urgently needed to man the newly-organised health departments and centres. During the last two years the institute has been almost overwhelmed by demands for assistance from the cities and provinces. The League's share in the organisation of this institute has been to obtain expert advice in drafting its program, to enable its Chinese staff to obtain suitable training abroad, to place at its disposal the services of experts from the Health Organisation's technical commissions, and to give its staff the benefit of the constant advice and council of a representative of the Health Section with long experience in the organisation and administration of similar institutes, who has spent the last three years at Nanking.

Health work in China must be adapted to rural conditions as China is essentially an agricultural country. The staff of the central health institute must seek to develop suitable methods of rural health administration. Hence the great significance of the pioneer health work which is being carried out at Ting Hsien with the help of the Milbank Memorial Fund.

Similar assistance has been sought by other Governments but these two examples suffice to illustrate a type of work which must remain permanently on the program of the Health Organisation, while its duration as regards any given country is of necessity only temporary.

carry me too far for the purposes of the present article, but the reader may obtain several publications on the subject, especially a report prepared by Professor Knud Faber, Dean of the School of Medicine at Copenhagen, on medical training in China.

Health and the Depression. Of the Health Organisation's temporary activities, those which have to do with the effects on health of the depression are classic examples. This subject is of real concern to many Governments which have been forced to provide food, shelter, and medical care to increasing numbers of unemployed. In 1932, the Health Organisation adopted a program calling for studies on the nutrition of the unemployed, the housing of the unemployed or partially employed in settlements on the outskirts of cities (subsistence homesteads), and the methods of providing adequate medical care and health protection to the classes suffering most from the depression. An important task was to consider how the responsibilities of the public health services might be safeguarded while their resources were being reduced. A group of experts, convened by the Health Organisation in 1933, produced a report on this subject which has been largely utilised by health administrations.[7]

In the immediate future the Health Organisation will in all probability devote its attention largely to three of the subjects which have been taken up in this connection, and these will remain on its program even after the depression is over.

Public Nutrition. The first of these is public nutrition. The facts revealed by the examination of school children and recruits, and the fear that lowered standards of living resulting from the depression will reduce human stamina, coupled with the great recent advances in our knowledge of the science of nutrition, make the subject one of extreme current interest.

In this connection it may be of interest to see how the work of the Health Organisation hangs together, how related activities carried on at different periods lead finally to a rounded program of work in one field. The first step was the publication of a report, THE FOOD OF JAPAN, by the late Professor Egerton Grey who spent some months in the Institute of Nutrition at Tokio

[7]Safe-guarding the Public Health during the Depression. *Quarterly Bulletin* of the Health Organisation, ii, No. 2, June, 1933.

under the auspices of the Health Organisation. Professor Saiki, the director of that Institute, later visited certain South-American countries, including Chile, in the course of an individual mission granted him by the Health Organisation. His visit and lectures aroused interest in public nutrition which later culminated in a request for assistance in the study of the nutrition of its people by the Chilean Government. The League is now arranging to send a mission to Chile, consisting of economists and experts in nutrition, to cooperate with the Chilean authorities. In 1933, a conference of experts was convened in Rome to recommend standard methods of carrying out dietary enquiries, while late in 1932 another had been convened in Berlin to report on the most suitable method of detecting early indications of malnutrition among the unemployed. The report of the latter has been utilised in several countries for the conduct of enquiries, and one of the most interesting and significant of these was carried on in America by the United States Public Health Service in cooperation with the Milbank Memorial Fund. The studies, undertaken by the Health Organisation to determine the influence on health of the economic depression, have been concerned in part with the level of nutrition among the unemployed, the relation between diet and size of income, and the best use to be made of a reduced food budget. The Health Organisation has also cooperated with the Government of Roumania in a study of pellagra in certain Roumanian villages. Now the next logical step is being taken, the preparation, after suitable studies, of a report, analytic and comparative in character, which will show what is being done for public nutrition in the most advanced countries in relation to our present knowledge of the subject.

Good Housing. Housing is the second of these subjects. Taken up in connection with suburban settlements of the unemployed, interest has broadened to include good housing in general as one of the most important factors contributing to human welfare. A glance at the proceedings of parliament in almost any country

reveals the importance given to housing in the debates on public health. At present the Health Organisation's program in this field is being worked out slowly and cautiously. That there is a real demand for international action, or at least for that more modest collection, analysis, and exchange of experience on an international scale which characterises the exploratory work of the Health Organisation, is shown clearly by the debate in the Second Committee during the 1934 session of the Assembly.

The Public Health and Medical Services. Finally, long after the present depression is over, the Health Organisation will continue to study and report on the rational organisation of the public health and medical services. The recommendations of the European Conference on Rural Hygiene constituted a first step in this direction. This was followed by studies on the cost of various forms of health organisation carried on by several institutes of hygiene in Europe under the auspices of the Health Organisation. A valuable form of cooperation has been set up with the International Labour Office in the study of certain health aspects of health insurance which seeks to provide relief and adequate medical care to the socially weaker classes in the community. The rational organisation of health and medical services, including hospitals, is a subject which no intergovernmental health organisation with a general mandate could neglect even if it would.

Space does not permit me to deal adequately with the remaining subjects on the League's program of health work,[8] which I am forced to dismiss with only brief mention.

The Health Organisation has had a Commission on Leprosy which has published detailed reports on its treatment and prevention. An international centre for the study of leprosy, placed at the disposal of the League by the Brazilian Government, was inaugurated at Rio de Janeiro in April last.

[8]The program in detail as adopted by the Health Committee in May, 1934, may be found in document C.233, M.97, 1934, iii.

A report on the welfare of the blind, containing information on the measures taken for the relief of the blind in the most advanced countries was published several years ago. The Government of the Union of South Africa has asked the League to prepare a similar report on the welfare of the deaf.

After long study the Health Organisation adopted and published a general report[9] on the principles underlying the prevention of tuberculosis. A conference on BCG was convened in Paris some years ago. The Health Committee is resolved to continue its work on tuberculosis as circumstances permit.

A few years ago intensive studies of infant mortality in selected districts of seven European and four Latin-American countries were carried out under the auspices of the League by methods recommended by a group of experts convened by the Health Organisation. At present, a comparative report on infant mortality in the principal countries is in course of preparation.

A series of reports on the development and present status of school hygiene is being prepared by national authorities, and in course of time these will be followed by an international report, analytic and comparative in character. A similar method was followed as regards medical education. The wide interest in this subject, based on the desire to adapt the training in medicine to the demands which modern society imposes on the doctor, led the Health Organisation to publish first a series of authoritative national reports, and later to the preparation, adoption, and distribution of an international report which defined clearly the basic training necessary for the doctor of today. This report[10] aroused much interest and was utilised by national committees concerned with the reorganisation of medical training.

The question of cancer has engaged the attention of the Health Organisation almost from the beginning. Its role in this

[9]General Principles Governing the Prevention of Tuberculosis. *Quarterly Bulletin* of the Health Organisation, i, No. 4, December, 1932.

[10]Medical Education and the Reform of Medical Studies. *Quarterly Bulletin* of the Health Organisation, i, No. 4, December, 1932.

field at present was clearly set out by a group of experts who met at Zurich in July last. It is to obtain from the radiological institutes engaged in the treatment of uterine cancer reports collected by comparable methods on standard record forms, so that the results of treatment by different methods may be more readily accessible and more easily interpreted.

Nor has the prevention of heart diseases escaped attention. At the last session of the Health Committee it was decided to collect and publish information on the methods applied in countries which are attempting to cope with this important health problem, so that more universal interest might be aroused.

The Health Organisation convened an International Rabies Conference at Paris in 1927, and has been publishing ever since periodic analyses of the reports from Pasteur Institutes on the results of anti-rabies treatment.

Such subjects as milk, the fumigation of ships, opium smoking, immunization against scarlet fever and diphtheria, secret remedies and charlatanism, and many others have been taken up, dealt with according to the need of the moment and either dropped or allowed to lie fallow for the time being.

The question of syphilis cannot be dismissed with such brief notice. The Commission on Biological Standardisation has adopted standards for the arsenical preparations used in the treatment of syphilis. It has also held several laboratory conferences to compare and report on the serological tests used in the diagnosis of the disease. The reports of these constitute authoritative statements as to the comparative specificity and sensitivity of each of the tests, statements which are very generally accepted because the authors of the different methods and modifications were present at the conferences and took part in the actual work of testing a series of unknown sera. On the basis of the work of these conferences, a committee of experts drafted and presented to the Health Committee a series of recommendations regarding serological tests which was adopted

and published.[11] In 1928, a group of experts in syphilis was called together at Geneva. Their report to the Health Committee called attention to the fact that in the fight against syphilis, the results obtained have not been such as the almost universally recognised progress of syphilis therapy would give reason to expect. The explanation which came to their minds was that developments in the matter of syphilis diagnosis and therapy are not exploited everywhere in the right way and with the promptness desired, and that a uniform generally recognised method of treatment did not as yet exist. They considered that a statistical compilation of the results of treatment at a number of clinics in several countries would give a better idea of the efficacy of the different methods of treatment used in these clinics. Directors of important clinics in five countries (England, France, Germany, Denmark, and the United States of America) agreed to cooperate and ever since have been working up their cases according to the rules set out by the experts. The uniform records of treatment have been analysed centrally, and the final report is now ready for submission to the group which is expected to meet before the end of the year. I shall not enlarge on the difficulties of dealing with such a large number of records, each one of which had to be considered individually, nor is it within my province to forecast the probable value of the final report, which will speak for itself. My task is to mention the items in the Health Committee's program as regards syphilis, which is to be rounded out by a general survey of the disease, covering its diagnosis, treatment, and prevention. The chapter on diagnosis has been completed, that on treatment will be constituted by the report mentioned above, leaving only the chapter on prevention to be worked up. It is hardly necessary to add that the final chapter will also be the most difficult in view of the lack of agreement on methods of prevention existing within the confines of almost any single country.

[11] *Quarterly Bulletin* of the Health Organisation, i, No. 4, December, 1932.

This is in brief the Health Organisation's program of work. To many it may seem far-reaching and even over-ambitious. But the history of all important new organisations is one of slow development during their early years in comparison with their progress thereafter. I suspect that when our children come to look at the plans that we have plotted out for the future, even as regards international health work, they will laugh to think that our horizon was so limited. For there is every sign about us that we are entering into a new world, and in that new world the barriers which separate countries and peoples must be replaced by ever-thickening ties of international cooperation if civilization is to survive.

THE INFLUENCE OF THE MEDICAL PROFESSION ON THE ENGLISH HEALTH INSURANCE SYSTEM

by GEORGE F. MCCLEARY, M.D., D.P.H.[1]

THE inception of the English health insurance system marks the first appearance of the medical profession as an organized and effective force in political life. The plan as originally introduced by the Government into Parliament was prepared without consultation with the profession. It was modeled on the German system, and contained elements that had long been regarded by physicians as inconsistent with the provision of satisfactory medical services. At the insistence of the profession, it was radically altered; and when in December, 1911, it emerged as an Act of Parliament—the National Insurance Act, 1911—it embodied certain basic principles which the physicians in Germany and other continental countries where compulsory health insurance had been introduced had for many years striven vainly to secure. For this reason alone the inception of the system was an historic event, the significance of which is even now but little appreciated.

Health insurance as it appeared in a rudimentary form in medieval Europe and gradually developed during the Eighteenth and the first half of the Nineteenth Century, was not regarded as a means of providing medical treatment; it was essentially a form of insurance against unemployment—unemployment due not to inability to obtain work but to inability by reason of sickness to perform work. Its object was to provide money payments for the disabled wage-earner, and it developed a system of administration adapted to secure that object. But during the second half of the Nineteenth Century, and especially after the beginning of compulsory insurance in Germany in 1883, the provision of medical services was added to the payment of cash

[1]Formerly Principal Medical Officer of the English National Health Insurance Commission, and a Deputy Senior Officer of the Ministry of Health.

benefits and soon became of increasing comparative importance.

But the provision of medical services involved the employment of large numbers of physicians; and by the time the English plan made its appearance sufficient experience had accumulated to convince the English physicians that systems of administration designed to pay cash benefits were unsuited to provide medical services on a large scale, and that only by certain drastic alterations in the arrangements that had hitherto been adopted could health insurance be made acceptable to the medical profession. These alterations were based on principles formulated in the famous Six Cardinal Points of the British Medical Association, which were published in 1911 and were in substance accepted by the Government and embodied in the English national health insurance system.

One of the most important provisions was the separation of medical services from the administration of cash benefits. The plan in its original form placed the physicians under the control of the insurance societies, who were responsible also for the payment of cash benefits. The British Medical Association insisted that the physicians giving service under the system should have no direct contact with the insurance societies, but that medical benefit should be administered in each area by a local committee specially constituted for the purpose, on which the local physicians should be adequately represented. This was carried into effect and was the first expression of the modern tendency to separate the medical services side of health insurance from the cash payments side—a tendency which has been carried further in later systems, notably those of France and Norway. It is interesting to note that in the plans that have recently been put forward for discussion in the Western hemisphere, for example, the "Mutual Health Service" plan of the Michigan State Medical Society and the "Plan for Health Insurance in Canada," published last September by the Canadian Medical Association, no provision at all is made for cash benefits, compensation dur-

ing periods of incapacity being regarded as a function of unemployment, not health insurance.

We have seen that the tendency to separate insurance medical services from cash benefits first found expression in the Six Cardinal Points of the British Medical Association. It was an expression of the general principle on which the points were based, namely, that insurance medical practice should follow the lines of private medical practice. This principle necessarily involved acceptance of certain other measures of fundamental importance, all of which are embodied in the English system: (1) The right of every legally qualified physician to undertake the medical care of persons insured under the system; (2) free choice of physician by patient, subject to the physician's consent; (3) effective participation of insurance physicians in the administration of the system; (4) the method of medical remuneration in any area to be that chosen by the insurance physicians of the area. The Association concluded that these measures could best be secured by the panel system, which, under pressure from the Association, was adopted by the Government and became the method of providing medical services under the Act.

THE PANEL SYSTEM

The term "panel system" is sometimes regarded as equivalent to "insurance medical service." But this is not so. Insurance medical services may be, and in some countries are, provided not by the panel system but by whole-time salaried medical officers or by practitioners admitted on approval to a restricted list of insurance physicians. The panel system is one in which the authorities responsible for providing medical services keep a list, or panel, of physicians who choose to give service under the arrangement made by the authority. Any physician may place his name on the panel, and a patient is free to choose any physician on the panel. The panel system does not involve whole-time service; all the English panel physicians have pri-

vate practices in addition to insurance practice. Nor does the system necessarily involve the capitation method of remuneration; at the inception of the scheme the panel physicians in two areas, Manchester and Salford, elected to be paid per call, but this involved so much clerical work that after twelve years' experience they changed to the capitation method, that is, a fixed annual fee per insured person on the physician's list.

PARTICIPATION OF INSURANCE PHYSICIANS IN THE ADMINISTRATION OF THE SYSTEM

In some health insurance systems, the physicians are entirely subject to non-medical control; they do their work and receive their remuneration, but have no voice in determining the conditions under which they serve. This is not the case with the English system, which in construction, development, and day-to-day administration is stamped with the impress of the medical profession. In each local area the medical service is administered by an Insurance Committee[2] on which the local physicians are effectively represented, and this committee is assisted by a committee of physicians, the Local Medical and Panel Committee, which is charged with important advisory and administrative functions. Every year the Local Medical and Panel Committees hold a conference at which amendments in the regulations governing the medical service are discussed, and, if adopted, are presented to the Minister of Health by the executive committee of the conference, the Insurance Acts Committee of the British Medical Association, which is recognized by the Minister as representing the general body of insurance physicians. No change in the regulations is made by the Minister without previous consultation with the Committee. In the settlement of grievances and all other matters affecting the conditions of medical service, the system provides that the insurance physicians shall play an important part.

[2]There are 146 insurance committees in England and Wales, one for each county and county borough.

GRIEVANCES

If an insured person complains to the Insurance Committee that his physician has not given him proper treatment, or if an insurance society complains that a physician has issued certificates of incapacity without having examined the patient, or has in some other way contravened the certification rules, the complaint is heard by a sub-committee of the Insurance Committee, consisting of an equal number of physicians appointed by the Local Medical and Panel Committee and of representatives of insured persons, with a chairman elected by the sub-committee from the members of the Insurance Committee who are neither physicians nor representatives of insured persons. The facts found by the sub-committee must, if there is no appeal, be held to be established. Either party to a case, may, however, appeal to the Minister of Health against the sub-committee's decision, and the appeal is heard by a special tribunal constituted by the Minister, which, if the complaint alleges negligence in the treatment of a patient, must include a member of a panel of insurance physicians nominated by the British Medical Association.

QUESTIONS AFFECTING THE RANGE OF SERVICE

The English insurance physicians are all general practitioners; they are under no obligation to perform specialist services, which are defined as those "involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess." If a question arises whether a particular service is or is not a specialist service, it is referred by the Insurance Committee to the Local Medical Committee for an opinion. Usually the opinion is accepted, but if it is not, the question is referred by the Minister of Health to an independent tribunal consisting of a lawyer in actual practice and two medical practitioners. The decision of this tribunal is final.

THE CONTROL OF EXTRAVAGANT PRESCRIBING

In all health insurance systems in which medicines are supplied at the cost of the insurance funds, some means must be adopted to check the ordering of medicines in excess of what is required by the needs of the patient. In some countries, extravagance is checked by requiring the patient to pay a substantial proportion of the cost of medicines prescribed for him; in Norway, he pays the whole cost. Under the English system, medicines are supplied without charge, and the Local Medical and Panel Committees are relied upon to check extravagance. Records are kept of the costs incurred by the prescribing of every insurance physician, and if it appears that a physician's prescribing costs much exceed those of his colleagues in the same area, he is visited by a Regional Medical Officer of the Ministry of Health, who discusses with him the causes of the high costs. If after the interview the physician's prescribing still seems unnecessarily costly, the Minister may refer the case to the Local Medical and Panel Committee, who hear the physician's explanations, and if they decide that his prescribing has entailed a charge on the insurance funds in excess of what was reasonably required for adequate treatment, they must estimate the amount of the excess, and that amount or a part of it may be withheld by the Minister from the physician's remuneration. He may, however, appeal to the Minister against the Committee's decision, and the appeal is heard by an independent tribunal of medical practitioners.

It will be seen that under the English system the checking of extravagant prescribing is an intra-professional matter. The question whether a physician has made an unnecessarily expensive use of medicines is decided not by laymen, or by medical officials, but by practising physicians.

CARELESS CERTIFICATION

An insurance physician is under obligation to issue, on re-

quest, certificates of incapacity to patients who are in his opinion incapable of work, and it has been found necessary to devise a method of checking the issue of certificates without sufficient care. The method is similar to that used to check extravagant prescribing. Records kept of the number of patients of each physician who are referred to the medical referees of the Ministry of Health for a second opinion, and of the number who cease to draw benefit after the reference either because they declare off the benefit funds on receiving the notice of the referee's examination or because they are found by the referee on examination to be capable of work. If the records of the physicians in an area show on comparison that any physician has an unusually high proportion of patients who cease to draw benefit after being referred to the medical referee, the facts relating to his certification may be laid before the Local Medical and Panel Committee for a decision on the question whether he has issued certificates without exercising reasonable care.

It will be seen, then, that the influence of the medical profession on the English health insurance system has been profound and far-reaching. The system has to a large extent been moulded by the profession, and in the administration of the medical service the profession take an important and effective part. It is largely for this reason that the system is accepted by the general body of the profession as a satisfactory method of providing medical care for those members of the community who are unable from their own unaided resources to pay for the medical services they need.

THE DEVELOPMENT OF NEIGHBORHOOD HEALTH SERVICES IN THE UNITED STATES

by IRA V. HISCOCK[1]

THE modern conception of a health center visualizes a community agency engaged primarily in preventive medicine and public health education, centering in an organization of physicians, nurses, and other health and social workers, and volunteers. It aims to reach all people within a district who need the services, and to coordinate the health, and sometimes the medical, recreation, and social service activities. Such an institution is sometimes called a major health center, in contrast with the so-called minor health center, which may be a well-child health conference or a small district headquarters for one or more specialized health services. In either case the program is designed to supplement the services of private physicians.

A basic principle is the decentralization of public health work in order to bring it closer to the people. It is significant that official health departments in a number of cities and counties have already organized their resources on a neighborhood or district basis, cooperating with medical societies and nonofficial health and welfare agencies.

The functioning of various types of health centers can best be understood by describing a few in widely separated places which have been in operation for several years. But before doing so it may be of interest to trace the main influences which have shaped the present-day community health centers.

Influence of Settlements. The neighborhood health center is to some extent an outgrowth of the experience with what is known as a "settlement." The settlement house originated in England and the movement subsequently spread throughout the World.

Samuel A. Barnett (1844-1913) and his pupil, Arnold Toynbee

[1]Professor of Public Health, Yale School of Medicine.

(1852-1882), considered the pioneer settlement worker, are intimately associated with the development of the first settlement, Toynbee Hall, opened in London on Christmas Eve, 1884, which became the source of inspiration and information for the subsequent settlements in Europe and in America.

The first American settlements developed in New York and Chicago. Stanton Coit, upon his return from London after three months of residence at Toynbee Hall settled in a tenement house on the East Side of New York to undertake neighborhood work. While Jane Addams was studying in Europe, she heard of the social advances in England and visited Toynbee Hall. Upon her return to the United States, she called forth the new spirit of human relations in Chicago, and under her leadership, Hull House was founded there in 1889.

Settlements were located in the poorer sections and in neighborhoods where a large proportion of the population were foreigners. The people of the community came to the settlement houses for information regarding various troubles. In some places the residents were trained in the care of illness, and such settlements soon became headquarters for aid in sickness. Furthermore, first-aid rooms were opened in some settlements.

When the settlements came into existence, district nursing was in its infancy.[2] The early work of Lillian Wald, as a nurse, and the immediate recognition of its relationship to other social adventures, carried on the settlement idea and led to the establishment of Henry Street Settlement in New York. Living in the midst of their service, as good neighbors and nurses, Miss Wald and her associates developed an immediate organic relationship to the community. They aimed to create service "on terms most considerate of dignity and independence of patients."[3]

[2]William Rathbone of Liverpool, England, organized a visiting nurse service in May, 1859, to provide service for the poor. In 1877, a visiting nurse service was established by the Women's Branch of the New York City Mission.

[3]Wald, Lillian D.: THE HOUSE ON HENRY STREET. New York, Henry Holt & Co., 1915.

The local office soon became the neighborhood center, with mothers' clubs, behavior classes, and a milk station. Preschool and maternity clinics and later the New York Kindergarten Association work were associated with the nursing center, while "first-aid room" care was included with tuberculosis service. The forty years of Henry Street experience advanced the understanding of district service, and the organization has joined in the health center programs later formulated.

Infant Welfare Stations. Pioneers in systematic improvement of infant feeding and infant hygiene about 1890 were Koplik in New York, Herrgott in Nancy, and Variot and Budin in Paris.[4] Koplik, Herrgott, and Budin all emphasized the importance of breast feeding, and Budin called his center a "consultation des nourissons." Variot stressed the distribution of pure cows' milk. Gradually the movement for the reduction of infant mortality became educational, the prime task, as in tuberculosis, being to carry sanitary and hygienic knowledge into the individual home.

Assuming that disease and death among infants during the summer season were largely due to contaminated milk, Nathan Straus, a New York merchant, established, in 1893, the first chain of stations in this country in which pasteurized milk was distributed free when needed. The Henry Street nurses had shown the value of the milk station plan and had prepared individual formulae with the facilities available in the poorest homes. On the basis of results in New York City, Dr. George Goler, health officer of Rochester, in 1897, organized municipal milk stations there.

The residents of various settlement houses in the United States were greatly influenced by these achievements and many opened similar milk stations. But it was not enough to distribute milk; it was also necessary to teach people how to use it

[4]Koplik: The History of the First Milk Depot or Gouttes de Lait with Consultations in America. *Journal of the American Medical Association*, October, 1931, xiv, No. 9, p. 1574; and Van Ingen, P.: in Historical Volume, A HALF CENTURY OF PUBLIC HEALTH. New York, American Public Health Association, 1921, p. 290.

properly. The settlement nurse, as at Henry Street, began to visit homes to show mothers how to prepare the feedings and how to care for the babies' food in general. A baby clinic was established at Greenwich Home, New York, in the summer of 1903. Two years later, in 1905, infant-saving campaigns on a city-wide scale were organized in Chicago by the Northwestern University Settlement, the Chicago Relief and Aid Society, and others.

In 1902, the Milk Fund Association of Cleveland instituted a plan whereby only babies brought to the central station and examined by physicians were given milk according to the formula prescribed. The physician not only examined the child but advised the mother on hygienic matters. Thus settlement milk stations and clinics became centers of constructive hygiene.

Later, attention was given to prenatal and obstetrical care. In 1905, G. S. White, the head of the Union Settlement of New York, started an investigation of the services of midwives. This study was conducted under the auspices of the Public Health Committe of the Neighborhood Workers' Association, of which Miss Wald was chairman. In 1907, on the initiative of this Association, a law was passed in New York City to regulate the practice of midwifery by the City Health Department.

Neighborhood health services in the settlement were mostly preventive and educational, although some settlements maintained diagnostic and treatment clinics. Exhibits were given on various subjects, such as the protection and handling of food in markets and in the homes, baby clinic service, proper clothing and bedding for children. Small instruction groups were organized to supplement exhibits, dealing with first aid and care of the sick, personal and family hygiene.

There were many centers which seemed to mark a transition stage from the earlier settlement idea to a health center program. The Irene Kaufman Settlement Health Center in Pittsburgh resembles a settlement in some respects; it houses several

agencies: an open-air school for anemic, undernourished, and tuberculosis contact children; a district milk station, nurses for bedside nursing care, a district clinic of the Pittsburgh Maternity Dispensary offering prenatal, delivery, and post-partum, care, and maintains a day nursery.[5]

Experiences from settlement work are useful in the planning of district health administration. Robert A. Woods,[6] in his book THE NEIGHBORHOOD IN NATION-BUILDING issues a note of caution:

> "The local health center gathers under one head a group of services which in greater or less degree have been undertaken in the past by the settlement. In all their technical phases the settlement clearly and unquestionably must be ready to pass them over to the health center. It is, however, equally clear—and this the promoters of the health centers do not always appreciate—that all the values of acquaintance and influence which the settlement has in its various organizations—must continue to be of indispensable importance to any sort of comprehensive local health campaign."

In order that a district health center may function with high efficiency, it should bring together both health and welfare agencies. The problem of disease prevention is closely linked with social service, especially among families of low economic level, and the health and welfare workers may aid each other in the solution of their inter-related tasks. A health center of this type may be regarded as the latest development of the original infant welfare or milk stations. As visualized here, the health center is the focal point of modern district health administration.

Growth of the Health Center Movement. As methods of controlling tuberculosis and infant mortality became effective,

[5]Grateful acknowledgment is made of suggestions received from Abraham J. Levy, M.D., Dr. P.H., who assembled historical data for a dissertation in candidacy for the Dr. P.H. degree at Yale in 1931 on the subject of "The Health Center as a Community Health Service Unit."

[6]Woods, Robert A.: THE NEIGHBORHOOD IN NATION-BUILDING. Boston & New York, Houghton Mifflin Company, 1923, p. 279.

those in charge began to explore means of application to reach the greatest possible number of persons, and the health center plan in modified form was formulated. Another approach came through the efforts to coordinate the many specialized health and welfare services which have shown a marked development in the past quarter of a century. Davis points out[7] that during the formative period, from 1910 to 1915, the effort to relate services to a definite population or district began to take practical shape. In Pittsburgh, the tuberculosis workers started significant activities; and in Cincinnati, a health center program was likewise begun by the tuberculosis workers. In New York, in the child health field, a program was started by the New York Milk Committee; in Milwaukee, in the same field by the city administration; and in Philadelphia, also by child health workers. The coordination idea began to find local expression during the same period. In Boston, the Maverick Dispensary developed gradually into a coordinating center for a number of health activities in East Boston, but without coherent central organization.

Boston. The philosophy of the health center movement in Boston is discussed by Charles Wilinsky as follows:[8]

> " . . . Gaps in the programs, duplication and consequent waste, frequent inefficiencies and misunderstandings, could not help but lead to the conclusion that there was a great need for better coordination and correlation, more efficient organization, and more harmonious understanding between those agencies concerned with the public health and with the amelioration of human suffering.
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> "It has been well said that the fault of public health administration in large cities particularly was due to the fact that it was too far removed from the people it attempted to serve. . . .

[7]Davis, Michael M.: CLINICS, HOSPITALS AND HEALTH CENTERS. New York and London, Harper & Brothers, 1927.

[8]THE HEALTH UNITS OF BOSTON, 1924-1933. City of Boston Printing Department, 1933.

> "To remedy this situation in Boston . . . the Blossom Street Health Unit was opened in 1916 under the direction of the Boston Department of Health. The objective . . . was the establishment, for a definite unit of population, of a local physical headquarters for the agencies engaged in health and welfare service."

The materializing of the program was made possible by a fund left by George Robert White. In the selection of location for a chain of units the leading factors considered were the character and economic level of the population, the health problems of the neighborhood and the need for certain health services. The first health unit, in the North End of the City, was turned over to the health department in 1924. Almost three million dollars have been expended for land, buildings, and the complete equipment of health units established through assistance of the White Fund. An eighth unit was provided entirely by the City, which is also responsible for the maintenance of the other units.

The buildings, quite uniform in construction, are several stories in height, built of brick, on spacious lots of land. A basement contains the heating and other maintenance services, showers for the workers, locker rooms, and lavatories. There is a completely equipped cafeteria.

The administrative offices and clinical services are on the first floor and a spacious lobby is utilized as a waiting room. There are ample facilities for the prenatal, child hygiene, tuberculosis, and other clinical services. A complete X-ray equipment is on this floor, adjacent to the examining rooms of the physicians.

The second floor is occupied by the Community Health Association, the Overseers of Public Welfare, the Family Welfare Society, the Catholic Charitable Bureau, and the Associated Jewish Philanthropies. There is also a large auditorium on this floor.

On the third floor are the headquarters of other participant agencies, rest rooms, et cetera. The roof, covered by "vita glass," is completely furnished and equipped as a solarium. Small chairs, tables, and cots for the use of small children are supplemented by sandpits, gymnasium apparatus, and other equipment for organized play.

During the building, development, and extension of the health units and their program, the work had the substantial backing and cooperation of the Boston Health League and the Boston Council of Social Agencies. This was of inestimable value in obtaining the essential support of individual citizens, leaders of the medical profession, and influential civic groups.

New York. In New York City, many factors led to the adoption of localized health service.[9] The city stretches thirty-six miles from north to south, and over sixteen miles from east to west, covering an area of over three hundred square miles. The resident population of the five boroughs is over seven million (1934) with a yearly increase of some 125,000. In addition, some two million people come to the City daily from surrounding areas for business or pleasure. There are about a million and a quarter school children. Nearly every nationality, as well as a wide range of economic and social level, is represented, special racial groups often being concentrated.

From the viewpoint of medical problems and resources, there are 125,000 cases of communicable diseases reported annually, with an attack rate for the common diseases varying in normal years from 895 per 100,000 in one section to 2,550 in another district. Within the City are 150 hospitals and 1,600 various kinds of clinic services for the care of the sick and for the promotion of health. There are five county medical societies, the Academy of Medicine, and district dental societies. The Wel-

[9]This outline is based on an historical review prepared by Savel Zimand, administrative director, Bellevue-Yorkville Health Demonstration, and reports of the Committee on Neighborhood Health Development.

fare Council has a membership of 800 health and welfare agencies performing 927 separate services.

While these data reflect conditions of 1934, those confronting public health authorities twenty years earlier were similar. The magnitude of the problem and the fact that local conditions must necessarily be considered in rendering effective health work then, as now, suggested localized administration as the answer to the question of how the Health Department could make its work more concrete to the people of the City. Thus, in September, 1914, the Department of Health, under Dr. S. S. Goldwater, then Health Commissioner, formulated a plan "to test the value of local administration of the functions of the Health Department." In January, 1915, the Health Department opened Health District No. 1 on the lower east side of Manhattan, to serve a population of 30,000, chiefly of Russian and Austrian nativity. This experiment proved so satisfactory that it was extended by Dr. Haven Emerson (Health Commissioner from 1915-1917) to the Borough of Queens, where four health districts were opened during 1916. These health district offices, while cooperating with the voluntary health and social agencies, were essentially branches of the health department.[10]

Dr. Emerson, in the Health Department report of 1915, describing Health District No. 1, states:

> "It was designated as an experimental district. First, to demonstrate the feasibility of combining the Health Department functions of the district under the direction of a local Health Officer; and second, to cultivate among the people of the district a cooperative spirit for the improvement of their health and sanitary conditions."

In 1916 there was created within the department a Division

[10]See New York City, Department of Health Annual Reports for 1915, 1916, and 1917; also Monograph No. 11 on Health District No. 1 by Dr. Alfred E. Shipley, published by the Health Department in 1915.

of Health Districts, under the Deputy Commissioner of Health. As the work advanced, it soon became apparent that a "complete public health program necessitated exercise of all health department functions in a given neighborhood."

A change in the city government interrupted the development of this project, although the experience was useful in demonstrating the values of district health administration. Health centers and health demonstrations were established during the war and post-war period,[11] which paved the way for subsequent activities of far-reaching significance. For thirteen years, twenty-one cooperating public and voluntary agencies worked in East Harlem from a central building to coordinate and improve health and social service, and the center was officially transferred to the Health Department in 1934.

The Bellevue-Yorkville Health Demonstration, under Health Department leadership and financed by the Milbank Memorial Fund and the Health Department, combined an experiment in metropolitan health administration with health services of eighty-five official and voluntary agencies. The activities were formally taken over by the Health Department in 1934.

In 1929, Dr. Shirley W. Wynne, then Health Commissioner, appointed the Committee on Neighborhood Health Development, composed of representatives of health, medical, and welfare organizations, to advise regarding the further development of health centers. This committee outlined a plan of procedure for district health service in areas of about 200,000 population. Since that time the Committee has been active in the preparation of morbidity and mortality data, the study of district problems, and the furtherance of neighborhood health center plans.

In 1934, Dr. John L. Rice, the Commissioner of Health,

[11] 1916, Bowling Green Neighborhood Association; 1918, Mulberry Health Center (A.I.C.P.); 1920, Judson Health Center; 1921, East Harlem Health Center; 1926, Bellevue-Yorkville Health Demonstration.

established a Bureau of District Health Administration with a full-time director, and appointed seven full-time district health officers. At his request, the Committee also appointed a subcommittee of physicians to cooperate in the project.

Meanwhile, a building program was planned by the City with the assistance of the Federal Public Works Administration. Mayor LaGuardia pushed forward the City's request to the Federal Public Works Administration concerning new health center structures with the result that by the fall of 1934 funds for the building of seven health center buildings had been granted by the Federal Public Works Administration. The program calls for gradual extension to provide buildings for each district of the City in need of such facilities.

Los Angeles County. During these years, there was an important development of district health administration and of health centers for counties, the most extensive of these programs occurring in Los Angeles County. Following the organization of the county health department to serve the unincorporated areas in 1915, plans were formulated to provide: (a) for the consolidation of the functions of health department work of municipalities with the County; (b) for a decentralization of the public health functions by the formation of districts, each to comprise several cities and the surrounding unincorporated territory, and (c) for cooperative relationship with school districts leading to the joint employment of nurses, dentists, and physicians. Steps were taken as early as 1919, under the leadership of Dr. J. L. Pomeroy, County Health Officer, to establish district health centers in this county of 4,000 square miles, and the first district office was opened in the city of Pomona. One small center was located in an unincorporated area at Duarte near Monrovia, where the County erected a building of four rooms for work among Mexicans and Negroes. Another four-room frame building was established as a health center for the Mexican settlement at Los Nietos, near Whittier in 1921. This was

Proposed Williamsburg and Greenpoint Health Center, New York City

East Side Health Center, Los Angeles County, California

Palama Health and Welfare Center, Honolulu, Hawaiian Islands

South Boston Health Unit, Boston, Massachusetts

Reprinted from "The Health [illegible] of Boston"

followed the next year by one at Belvedere Gardens. Centers were also established in two localities to care primarily for industrial problems. The health center plan was adopted as a policy by the County in 1924. Today some thirty-five cities in Los Angeles County have jointly organized their public health work with the county government.

The first large health center was completed at San Fernando in 1926, at a cost of about $54,000. Seven major health centers have since been erected, besides several smaller ones, those of more recent construction costing around $100,000 each. The County paid for the buildings, but in most instances the local community provided the land. This county health center plan provides for the decentralization of the County Outdoor Relief Department, having to do with the care of the indigent and dependent persons in their homes, since the district staffs of this department are housed in the health center buildings. In order to meet the many medical and medical-social problems encountered, a medical advisory board, appointed by the County Board of Supervisors, considers problems related to local medical clinics and hospital staffs of the health centers. Each of the major health centers has a medical social service worker on the staff of the Health Department, who maintains liaison between the Health Department, the Relief Department, and various medical and social service institutions and organizations. The larger health centers originally provided through the Health Department plan for emergency care and dispensary type of treatment, but, due largely to the complaints of physicians that the clinics were rendering care which should be handled by private physicians, this work has now been largely turned over to the county general hospital and the Welfare Department.

The health center offers diagnosis and preventive treatment of tuberculosis, syphilis and gonorrhea, dental treatment, prenatal, infant and preschool health conferences, and public health

laboratory service. The health department staff of the area, including nurses and inspectors, work out from these headquarters. A central division of accounts maintains control of expenditures and this work is correlated with the division of records. A distribution of costs is made monthly by districts and by functions. Other notable county health center programs which might be described if space permitted, include those of Alameda County and of San Joaquin County, California.

The New Haven Experiment. For three years, beginning July, 1920, the "New Haven Health Center Demonstration" was under a unified management with a board of control of twenty-one members who were representatives from a number of organizations, primarily the City Department of Health, the Visiting Nurses' Association, the New Haven Medical Association, and the local chapter of the American Red Cross. The Board of Aldermen, the Board of Finance, and citizens at large were also represented. The organization was thus of a representative though not a federate character. The director who was responsible to the board of control had no administrative authority over the personnel of the Health Department or the Visiting Nurses' Association working in or from the center. However, the organization of the board was such as to coordinate the general policies of these agencies.

The services rendered by the center during the demonstration period, to a population largely foreign, were preventive. Continuous and ingenious efforts to encourage annual physical examinations had comparatively small results. However, there was some success in giving such special services as vaccination and diphtheria protection among children. During the three years the visits to the center averaged 4,300 per year in a population of about 25,000. These were made by individuals constituting nearly 25 per cent of the district, and about 85 per cent of all the families in this district had some member visit the center. However, the inspection and examination of nearly

6,000 school children, the stimulation of well-baby programs, and the home nursing services were even more important. The center was the base of an experiment in generalized nursing undertaken by the Visiting Nurses' Association, and this experience led to the generalization of all visiting nurse service in the City. At the close of the demonstration period, a portion of the health center work was continued by the Health Department.

Efforts by the center to develop active participation by the citizens of the locality were relatively unsuccessful. This fact, together with the lack of success in developing service at the center, illustrates the necessity of offering a kind of service that a district wants as well as needs, at least to the extent, as Michael Davis says, of evoking sufficient initial response from the population to establish satisfactory contacts leading to continuous and growing relations. On the other hand, the accomplishments of the health center staff in the field, the development of generalized nursing, and the demonstration to city authorities of the need for more aggressive health work in the City were beneficial results.

SPECIAL TYPES OF DISTRICT HEALTH CENTERS

Honolulu. Although serving the entire City, the Palama Settlement in Honolulu illustrates a type of center somewhat broader in scope than usual, but providing a valuable correlating force and service agency. Besides medical, nursing, and dental services, excellent recreation opportunities are offered. Founded in 1896 as an institution for religious worship, this institution has gradually expanded its program to provide an efficient health and welfare center, including treatment clinics. For several years Palama has maintained the principal outpatient service of the City, as well as prenatal, infant, and preschool conferences. A large athletic field, a swimming pool, a gymnasium, tennis courts, and a recreation center form parts

of the program, which emphasizes positive health. This work is closely correlated with the activities of the Board of Health, the Department of Public Instruction, and various welfare agencies; it is partially supported by public funds, but largely by voluntary agencies. A voluntary agency is responsible for administration.

Buffalo. Meanwhile, in 1912, Buffalo began what later developed into an extensive hospital and health center program. At that time, under the jurisdiction of the Department of Health, a hospital for acute communicable diseases, thirteen well-baby milk stations and two dental clinics for school children were set up. Shortly thereafter there was added hospital and dispensary service for patients suffering from tuberculosis, mental diseases, venereal disease, and alcohol and drug addiction. City or district physicians formerly connected with the Poor Department were transferred to Health Department supervision. Eventually five dispensaries for the reception and treatment of all diseases were organized. The districts which these served were correlated with existing Charity Organization Society tracts.

In 1917, a public general hospital was opened under the jurisdiction of the Board of Managers, pursuant to the provisions of the General Municipal Law, State of New York, and supported out of the municipal tax rate.[12] To this organization were transferred all hospital, dispensary, and home service curative agencies formerly conducted by the Department of Health. The Department of Health maintains the usual preventive services, while the Buffalo City Hospital is responsible for all curative features.

Baltimore. The most recent district health program is that of Baltimore. In the summer of 1932 there were brought to completion plans, initiated about eleven years before by Dr. William H. Welch, whereby the sixth and seventh wards of the

[12]Four branch dispensaries are also maintained for first-aid and trivial ailments. A complete diagnostic and treatment service is furnished by a paid medical staff organization centering around the hospital and the University of Buffalo Schools of Medicine and Dentistry.

City were combined into one unit of public health administration. This area has been designated as the Eastern Health District. In this plan the City Health Department participates to the extent of personnel and expenses normally incident to operation in the sixth and seventh wards; the Visiting Nursing Association and the Babies' Milk Fund Association, including the McElderry House project, participate on the same basis, and the School of Hygiene and Public Health of Johns Hopkins University supplies certain professional and clerical personnel, quarters, and incidental expenses up to $25,000 per annum, the money being granted by the Rockefeller Foundation.

The Eastern Health District is approximately a square mile in area and contains some 60,000 people. There are about 15,000 families in some 13,000 dwellings. The Negro population is 21 per cent as compared with 18 per cent for the City as a whole. Ward Seven has 26 per cent Negroes and Ward Six 15 per cent. Economically the area presents a fair cross-section of the City. In the past there have been but few extremes of wealth or poverty. In general, the residents would be classed as people with moderate or small incomes, though relatively a high per cent own their own homes. The foreign-born population is 13 per cent; 24 per cent are of foreign or mixed parentage and 42 per cent of native-white parentage.

Headquarters for the district were established September 15, 1932. The organization consists of a full-time medical health officer, one supervisor and two assistant supervisors of public health nursing service, eight staff nurses from the City Health Department (seven from the Bureau of Public Health Nursing and one from the Bureau of Child Welfare), four staff nurses from the Babies' Milk Fund Association, two staff nurses from the Instructive Visiting Nursing Association, two part-time health officers, the equivalent of the time of two sanitary inspectors, four part-time pediatricians, a bacteriologist and technician, two clerk-stenographers, and the necessary janitor and

messenger service, and occasional special and consultation service from the various interested public health agencies. Of this development, the Commissioner of Health writes as follows:

> "The District offers the City Health Department a number of advantages. It is a field wherein new methods of procedure may be put into operation and tested under close supervision. Such new administrative methods as prove desirable for the Department as a whole can be incorporated into departmental procedure. Again, the District offers to the City Health Department a field where new and inexperienced personnel may be trained. A certain percentage of the new or junior personnel who come to the Department through routine channels may be inexperienced in public health procedures though they have, of course, the necessary basic professional training. Such personnel can be placed in the Eastern Health District on somewhat of an apprentice basis and there, where facilities have been specially provided for teaching, the period of training can be appreciably shortened."

Another function which the district will serve is in intensive study of public health problems. Certain of these studies are continuously carried on by the Health Department, but still others will be possible in the district. With the affiliation of the School of Hygiene and Public Health, many of these problems can be given intensive and continuing study with resulting benefit to the City.

While the types of health centers and the scope of district health administration vary, there has been considerable development and experimentation in twenty-five years from which general principles and useful methods have evolved. The White House Conference on Child Health and Protection sub-committee on Health Centers of the Committee on Medical Service obtained information in 1930 regarding 1,511 major and minor health centers distributed throughout the country. Eighty per cent of these centers were established since 1910. Of the total number, 725 were directed by nonofficial agencies; 729 by

county or municipal departments of health; and a small number by the American Red Cross, various hospitals, child health organizations, case-working agencies, tuberculosis associations, and the like. In nearly half of these centers, the principal source of support was public funds, the remainder being received through community chests, or from private or voluntary funds.

METHODS OF DETERMINING THE PREVALENCE OF RHEUMATIC FEVER IN CITIES AND SMALL COMMUNITIES[1]

by JOHN R. PAUL, M.D.[2]

RHEUMATIC FEVER is one of the serious diseases of this country, ranking in importance with tuberculosis and syphilis. That heart disease often results from it has long been known. There is much evidence that rheumatic fever is infectious. Seemingly, also, it is more likely to attack children in the poorer families, particularly those living in damp houses, than the families in better circumstances. Obviously, an important public health problem is involved. However, no one knows the exact nature of the disease or the exact cause of it.

For all these reasons, rheumatic fever is a challenge to the medical profession and science in general. And any systematic study such as the one by Dr. John R. Paul, which he reports on in the following pages, deserves the thoughtful attention of all who are interested in improved protection of the public health.

Dr. Paul, whose work is aided by the Milbank Memorial Fund, is studying the relation between rheumatic fever and living conditions in New Haven, Connecticut, and surrounding regions. The results already obtained indicate the value of the special method of approach which he describes in essential detail.—THE EDITOR

RHEUMATIC FEVER has long been recognized as a major cause of sickness and death among children and young people in many parts of the United States, yet there is little exact knowledge about the prevalence of this disease throughout the country at large, about its relative prevalence in urban as compared with rural communities, and about its relative prevalence in poverty-stricken sections of the population as compared with the well-to-do sections. Obviously, it behooves us to strive toward supplying the much-needed knowledge in the hope that control of the disease may eventually be achieved.

Compulsory reporting of cases of rheumatic fever by physicians has been carried out in a few countries, but many of the attempts have been short-lived. Indeed, it seems questionable whether this disease at present lends itself to reporting. This

[1]From the Department of Medicine, Yale University School of Medicine, New Haven, Connecticut.

[2]Associate Professor of Medicine, Yale University School of Medicine.

is due not only to an apparent lack of contagiousness (so that reasons for reporting may not be obvious to some practising physicians), but particularly to its insidious clinical character and the difficulties in accurate diagnosis.

Attempts to estimate the frequency of rheumatic fever have been made through such means as the records of hospital admissions or mortality statistics. But these methods have proved unsatisfactory. In our study of the problem in New Haven, Connecticut, therefore, we have developed special methods, the description of which may be worth while.

In pursuing our investigation, we have aimed not merely to gather morbidity statistics, but also to learn more about conditions under which this obscure disease seems to flourish and to analyze these conditions in order to find out whether they can be altered. For example, it has long been suspected that, within certain districts of a given city or small community, groups of houses have existed in which an unusual number of cases of rheumatic fever were found. Almost fifty years ago, observations were made on this point in Germany, where in Kiel and Leipzig as many as five or six cases were found in one house on several occasions. The suggestion was made that rheumatic fever might be termed a "house disease." Such findings may have merely reflected a high familial incidence, but not all the cases from the so-called rheumatic houses represented the same family. There have been relatively few subsequent observations of this type.

Another feature which has been mentioned from time to time, and in which the attempt has been made to relate the presence or absence of rheumatic fever to more or less specific local environmental conditions, has been the association of the disease with damp soil or with rivers. These observations are for the most part casual in nature and have been largely derived from groups of patients attending special schools or a central clinic, without regard to factors of selection or to other factors

which might account for a concentration of cases within certain areas, such as crowding within districts where the rents were low.

Two concerted efforts have been made in England, however, to study the home distribution of rheumatic fever cases more carefully. One of these was begun in 1927 in the Borough of Kensington in London,[3] where rheumatic fever was made a reportable disease in children under sixteen years of age for a period of three years. A population and case map of the district, which was constructed, showed the greatest prevalence of the disease to be in poorer and densely crowded areas. The other British survey[4] was done in three counties in the western part of England from which cases were enrolled on a voluntary basis. The criteria of selection was limited to rheumatic heart disease occurring in children between the ages of five and fifteen. By and large the greatest prevalence of such cases was found among areas in which there was over-crowding, defective lighting, and low-lying housing sites.

Our own methods for gathering information on these points have been employed by the author only in the City of New Haven, Connecticut, and its immediate surroundings. They may be of some value to others interested in this problem, and are presented largely for purposes of comparison with similar future studies which might be initiated in this City or elsewhere.

A. *The Examination of School Children as a Means of Determining the Prevalence of Rheumatic Heart Disease within a Community.* Difficulties of determining the prevalence of rheumatic fever within a given community of appreciable size are such that in approaching the problem one is immediately forced to seek compromise measures. One of the first and the most

[3]Fenton, J.: First and Second Annual Reports on the Rheumatism Scheme of the Royal Borough of Kensington, London, 1929 and 1930.

[4]Savage, W. G.: Incidence of Rheumatic Heart Disease in Childhood (1927-1930) in Gloucestershire, Somerset, and Wilts. *Supplement* of the *British Medical Journal*, July 18, 1931, p. 37; and Coombs, C. F.: *Proceedings* of the Royal Society of Medicine (Section on Diseases of Childhood), 1931, xxiv, p. 99.

obvious of these is to determine the prevalence of rheumatic heart disease (which can be considered as an end result of certain cases of rheumatic fever). This compromise is not ideal because the development of rheumatic heart disease may perhaps be an indication of the type of therapy to which rheumatic patients are subjected, rather than an expression of the actual frequency of the disease responsible for the cardiac lesion. Nevertheless, it does represent a practical form of approach. Public and private school children below the high-school age offer a satisfactory group for study because generally they are an unselected group, supposedly representing a cross-section of the juvenile population of a given community. There are at least four methods of obtaining from school children data pertinent to this purpose. The first three are dependent upon the fact that certain grades or classes of the public (and private) schools in a community are subjected to an annual physical examination by school physicians.

I. The school physicians may be instructed to list all cases of rheumatic heart disease found among pupils examined. Thus the prevalence among various age groups in different schools may be determined. To our knowledge, this type of survey has been adopted only in a few instances because of the difficulty of actually determining, in the course of a routine school examination, whether a given cardiac "defect" is rheumatic or not. Careful diagnostic tests are not, or cannot often be applied in the usual school examinations of hundreds or thousands of children. The largest single factor of error seems to lie in the interpretation of the systolic murmur. Is it functional, or does it represent an organic heart lesion of rheumatic origin? Another important factor is the differentiation of congenital heart disease from rheumatic heart disease.

II. The school physicians may list all cases of *organic heart disease* found in the course of their examinations and from these figures one may estimate roughly the prevalence of rheumatic heart disease, if one assumes (as has been done)

that 80 per cent of organic heart disease occurring in children under sixteen years of age is due to rheumatic fever. The danger of this procedure again lies in the difficulty of accepting the findings of school examinations done on a large scale. Many estimates of this type have been reviewed in a previous publication.[5]

III. The school physicians may be instructed to list all children thought to have a definite or a suspicious cardiac "defect," and arrangements may be made for the reexamination of these children by an individual or group of individuals specially trained or interested in the diagnosis of rheumatic heart disease. Estimates based on this method include those of the Boston survey;[6] and of Goodman and Prescott in New York City.[7]

IV. All of the examinations of the original "unselected" group of school children may be performed by an individual who is himself specially trained or interested in the detection of rheumatic heart disease. The school physician may, of course, fulfill these qualifications. The disadvantage of this method lies in the practical impossibility of covering very large groups of children. The advantage lies in the interest and experience of the examiner in this field, the inclusion of certain schools such as private schools which might be missed by other methods, and the application of standard diagnostic criteria to the whole unselected group.

Methods II, III, and IV have been used by us in our attempts to determine the prevalence of rheumatic heart disease among public and private school children of New Haven and its environs.[5,8] According to Method II (1932), the average rheu-

[5]Paul, J. R.; Harrison, E. R.; Salinger, R.; and DeForest, G. K.: The Social Incidence of Rheumatic Heart Disease. A Statistical Study in New Haven School Children. *American Journal of Medical Sciences*, clxxxviii, September, 1934, p. 301.

[6]A Cardiac Survey of Children in Boston Public Schools. *The Nation's Health*, ix, No. 12, December, 1927, p. 21.

[7]Goodman, M., and Prescott, J. W.: Heart Disease Among Adolescent School Children. *Journal of the American Medical Association*, ciii, July 21, 1934, p. 157.

[8]Paul, J. R.: The Epidemiology of Rheumatic Fever. A Preliminary Report with Special Reference to Environmental Factors in Rheumatic Heart Disease

(continued on page 57)

matic heart disease rate among public school children of the City of New Haven proved to be 13.4 per 1,000; according to Method III (1930), 11.4 per 1,000; and to Method IV (male pupils only, 1932), 38.5 per 1,000.

Inasmuch as we believe that Method IV is the most accurate one which we have employed, it seems worth while to mention some of its details. Sample public and private schools were selected and permission for examination of the pupils was obtained from the Board of Education (or the headmaster in the case of private schools) as well as from the physicians in charge of the health of the school population. Only male pupils were examined in order to obviate certain problems with regard to the removal of clothing prior to the examination. An average of eight to ten minutes was spent on each boy. By this method, 958 pupils from six public and private schools were examined in the course of four months. A major task was that of finding the opportune moment in which time could be spared from routine activities of the school for these examinations.

While the diagnosis of clear-cut rheumatic heart disease offers little difficulty, the element of clinical judgment is particularly important in border-line cases. Criteria employed by us for the diagnosis of doubtful cases of rheumatic heart disease were as follows:

1. A history of rheumatic fever, if present, was regarded as of positive importance in the presence of questionable cardiac signs.

2. Some of the signs which have been regarded as of positive significance are given in the order of their importance. The presence of: (1) Apical systolic and pre-systolic thrills, or a systolic thrill transmitted to the vessels of the neck. (2) Pre-systolic murmurs, aortic diastolic and other mid-diastolic murmurs. (3) Cardiac enlargement which could not be explained on any other basis. (4) Loud or harsh systolic murmurs best heard at the apex and transmitted outwards.

and Recommendations for Future Investigation. New York, Metropolitan Life Insurance Company Press, 1930.

> The diagnosis of congenital heart disease usually rested upon the history, the cardiac findings, the presence of cyanosis, and clubbing of the fingers.
>
> The diagnosis or the interpretation of functional murmurs, of course, offered considerable difficulty. We have followed the view that more definite functional murmurs are generally present at the base of the heart and can best be heard when the patient is prone.

It should be emphasized that under the conditions in which our data were obtained, the application of these diagnostic criteria proved difficult. The majority of cases of rheumatic heart disease encountered among the school populations represented mild forms, and unfortunately the diagnosis of just such forms as these requires an appreciable element of personal judgment. It was our effort throughout, however, to include only the more definite cases.

Before attempting an analysis of the results obtained by any of the four methods, it is important to know whether the school population of children, routinely or specially examined, actually represents an unselected cross-section of the juvenile population of the City. If Methods I, II, or III are followed, it is important to know whether or not all parochial schools are included; and whether special schools exist in certain districts of the City for physically or mentally defective children. It is also obvious in the use of any of the methods that a small percentage of the severe cases of active or even old rheumatic heart disease may be completely missed because children suffering from those conditions may not attend school.

When the various known factors of error have been evaluated, the results obtained from any of these methods can be analyzed in a number of ways. Primarily, one may determine from the total number of school children examined the prevalence according to different age groups in the whole city. Of equal importance, to us at least, has been determination of the prevalence

in individual schools or groups of schools. Since public school children are generally drawn from a given district of the city, it is possible, if the population of that district is fairly stable, to relate the local prevalence of rheumatic heart disease to the local population density as well as to racial factors and general living conditions in that district. In the Boston survey, for instance, it was found that in the two most congested districts of the City the organic heart disease rate averaged 7 per 1,000, while in four less congested districts it was 4 per 1,000. Similar findings have been reported in New Haven.[5] With the exception of these two studies, however, and another carried out in three counties in the western part of England,[4] we are not aware of other school surveys in which the attempt has been made to relate the prevalence of rheumatic carditis to social, economic, or racial conditions.

B. Community Studies. Whether or not it is possible to select a small community and to determine by an intensive survey what the prevalence of rheumatic fever is, or has been, in that community, is the next question which we have attempted to answer. Primarily, we have had four objectives: (1) The determination of the actual number and ages of individuals who lived in selected communities within the City of New Haven; (2) the number of those who had contracted rheumatic fever in these communities; (3) whether or not the prevalence of rheumatic fever as determined by this method was higher in "damp" communities than in dry ones; and (4) whether or not the prevalence of rheumatic fever could be related to anything else.

Before starting our surveys, we obtained the approval of the City Health Officer. An outline of the proposed survey was then presented before the local medical society of the practitioners of the City. It was explained that if we should enter a house in which any member was under the care of a physician, that physician would be consulted before questioning or examining his patient. A favorable answer to the project was obtained.

Two "damp" communities were first selected on the following bases: (1) That the community did not contain more than twenty-five families; (2) that from our case map of the City which marked the home sites of New Haven Dispensary or Hospital cases of rheumatic fever there was at least one case listed in the district selected, and that we were not aware of the health of other members of the community; and (4) that the community was "damp," in that it was situated on the banks of a stream or river and that the cellars of many of the houses frequently became flooded with water. As controls for studying the "damp" communities, two communities of the same size were chosen on the bases: (1) That we did not know of any cases of rheumatic fever in the community; (2) that they were relatively dry; and (3) that the residents represented essentially the same social plane as that of the "damp" communities.

The limits of the community were first defined. A house-to-house survey was then made which involved a visit to every family and available individual. A surprising degree of cooperation was encountered, due, perhaps, to the fact that in many of the homes visited one or more members had at some time attended the New Haven Dispensary or Hospital and were familiar with follow-up methods. Histories were obtained from each individual with special reference to the occurrence of rheumatism, heart disease, sore throats and tonsillitis, scarlet fever, growing pains, frequent nose bleeds, St. Vitus' dance, and "malarial fever."[9] An examination of the throat and chest was also performed. This was done not only because many cases of rheumatic heart disease develop in the absence of clinical signs of rheumatic fever, but that an examination at this time seems to support and aid in obtaining a history. As we have repeatedly found from previous experience, it is not enough to question an

[9]It has been our experience that when children or adults who are not actively sick have been found from time to time to run an otherwise unexplained temperature, a favorite term applied in the past by the parents or family physician has been *malarial fever*.

apparently well individual, or his parents, with regard to his past health, particularly when the reason for the doctor's visit or his questions is not very apparent. A reply in the negative to most of the questions is the easiest and safest answer. But while the physical examination is being performed, and the tonsils, or perhaps the appendix, are found to have been removed, the individuals being examined (or their parents) are apt to give more thoughtful answers.

At the outset of the work it became apparent that the original idea of determining the prevalence of rheumatic fever among *all* the community residents would have to be qualified. As we were primarily anxious to know the relationship between the local environment and the presence or absence of rheumatic fever, we excluded from the survey those families which had not been in residence in the community for more than two years. We also excluded all individuals over fifty years of age. Reasons for excluding the older individuals concern the increased difficulties of making a diagnosis of rheumatic heart disease in an elderly individual. Memory with regard to juvenile illness is apt to be poor, and certain elements exist which cloud the diagnostic problem, such as the increased incidence of ostearthritis, hypertension, cardiac enlargement, and other cardiac signs, most of which are associated with arteriosclerosis.

Criteria for the identification of a case of rheumatic fever in these communities were: (1) A definite history of one of the manifestations of rheumatic fever; (2) evidences of the active disease; and (3) evidences of rheumatic heart disease with or without a history of rheumatic fever. Other symptoms obtained from the history which might or might not have been related to rheumatic fever were listed, such as growing pains and arthritis of various types. Some of these latter symptoms have been marked in the charts shown in Figures 1 and 2 describing the findings, but have not been considered in determining the prevalence of rheumatic fever.

A brief description of the four communities studied may be given as follows, the "damp" communities being designated as P and Q, the controls L and V:

Community P. This community consisted of a somewhat isolated group of twenty-nine wooden, one-family houses, situated in a sparsely populated district of the City. It was roughly about seventy-five feet above sea level. On one side was a swamp and a hill and on the other side a fairly large stream. The presence of a number of springs in the hillside resulted in the cellars of most of the houses being partially filled with water, or at least very damp, for the greater part of the year. Most of the residents were native-born Americans. A few were Polish or Italian. Ten of the twenty-nine houses proved to be either vacant or occupied by families who had lived there for less than two years. The remaining nineteen houses were visited, and from them a group of eighty individuals under fifty years of age was studied. Fifteen residents (18 per cent of the group) had at one time or another been patients in the New Haven Hospital or Dispensary and their medical records were available to supplement data obtained in the field.

Before our survey was started, three cases of rheumatic fever or heart disease were known to exist among the residents of this community. They were excluded from our subsequent determinations.

Community Q. This consisted of a street but a few feet above sea level, which followed the bank of the Quinnipiac River. A section of the street, a quarter of a mile in length, was selected. Many of the cellars of the houses on the river side of the street were flooded whenever the river was high. Sixteen families were studied and seventy-seven individuals were examined, the group including native-born American, Italian, Polish, Irish, and one Negro family. Nearly all lived in one- or two-family houses, half of which were situated on the river side of the street. Of the individuals examined, 14 per cent had at one time been admitted to the New Haven Dispensary or Hospital. Three cases of rheumatic fever from this district were listed in our Dispensary files. They were excluded from our subsequent determinations.

Control Communities. Community L consisted of a street, one block in length, located in a crowded but dry district, about sixty feet above sea level. Sixteen families were visited, and fifty-nine individuals were examined. They were largely of American and Irish extraction. A third of these had at some time visited the New Haven Hospital and Dispensary. Here we used the same type of survey as that used in the "damp" districts.

Community V consisted of a street one-half block in length, situated about thirty feet above sea level, in a densely crowded area close to the hospital. The district was poor but by no means one of the poorest in the City. Sixteen families were visited, and seventy-five individuals were examined. They included Russian and Polish Jews, but there were also Italian, Greek, and Spanish families in the group. Sixty-five per cent of these individuals had at one time visited the New Haven Hospital or Dispensary.

It is not the purpose of this paper to describe or analyze the results obtained from these surveys, for the work is in its infancy. Enough progress has been made, however, to show that the method is practical and that the criteria of community selection can be made on a number of bases other than dampness or dryness. It may suffice to say that in the two "damp" communities P and Q, five new cases of rheumatic heart disease were discovered in which primary symptoms had presumably developed while the patient resided in the community. In the "dry" communities no such cases of rheumatic heart disease were discovered. Two cases of "pre-existing" rheumatic heart disease were discovered in the "dry" communities, and two were also found in the "damp" communities. The prevalence of chronic arthritis was, or had been, a little higher in the "damp" communities, but the story was usually so indefinite that it was difficult to determine (particularly in individuals over twenty years of age) just what type of arthritis had been sustained. Some of the preliminary results have been charted in Figures 1

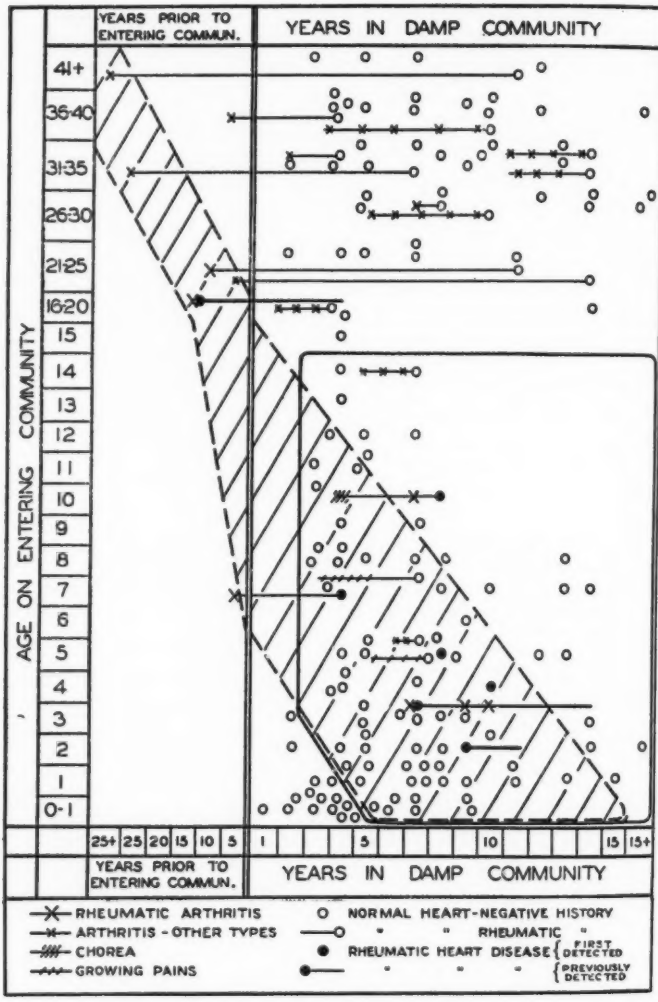

Fig. 1. Schematic diagram of the two "damp" communities P and Q.

These charts have been devised to show certain data with regard to normal and rheumatic individuals, exclusive of the six individuals who represented the basis on which these "damp" communities were chosen. These data include: (1) The number of individuals below fifty years of age (designated as circles and dots) who had lived in

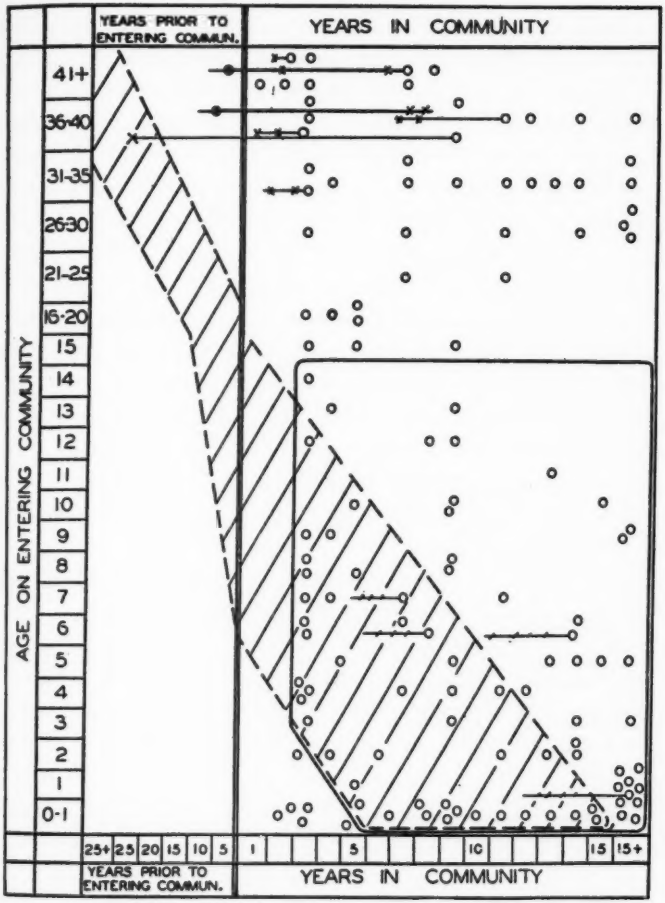

Fig. 2. Schematic diagram of the two control communities L and V.

these communities for more than two years; (2) the period of their life in which they were residents of the community; and (3) whether or not they had signs or symptoms of rheumatic fever. Each individual has been placed in the chart in relation to his or her age on entering the community (cf. vertical column of figures on left) and to the subsequent number of years spent in the community (cf. figures at the base of chart). The shaded area which crosses the chart diagonally represents the age period of greatest susceptibility to first attacks of rheumatic fever, namely, 5-15 years. Enclosed within the roughly oblong figure in the lower right hand side of the chart, therefore, are all the individuals who had spent part or all of their period of greatest susceptibility in the community.

and 2 to show the method of analysis rather than to emphasize any interpretation.

Obviously, a number of intricate problems arose when the attempt was made to relate the active or old cases of rheumatic illness to the size of these populations and to their years of residence in the community. These problems become more or less apparent from a study of the charts (Figs. 1 and 2) and the accompanying explanation of the manner in which our results have been expressed. A major element of difficulty was that the populations within these communities were far from fixed. In fact the number of individuals over ten years of age who had lived in the communities all their lives represented but a small fraction of each group. As a few cases of rheumatic heart disease were discovered in individuals who had not been born in the community, and who gave no history to show when they contracted their heart disease, this offered an annoying variable with which to contend.

In an effort to reduce the variables we believe that perhaps the most accurate estimate of the prevalence of rheumatic fever in these communities can be derived from the sub-groups of individuals (see lower right-hand corners of Figs. 1 and 2) who had passed one or more years of their period of greatest susceptibility (five to fifteen years of age) in the community. When computed on this plan, and excluding the cases on the basis of which the "damp" communities were selected, rheumatic heart disease was found to exist in 10.5 and 2.3 per cent respectively of those who had passed one or more years of their period of greatest susceptibility in the "damp" communities P and Q. No cases of rheumatic heart disease were found in the control communities. However, the problem is still not as simple as these statistics might suggest, for a glance at Figures 1 and 2 will also reveal another feature that may have some bearing, namely, that of the children who entered the "damp" communities below the age of three, their average stay was about five or

six years, whereas in the "dry" communities it was much longer. Possibly the element of "dampness" or "unhealthfulness" may have caused certain families to move out as quickly as possible, resulting in a more rapid turnover in the juvenile population, and this in turn would indirectly influence our determinations. Certainly it will not be until these and perhaps other factors have been analyzed that one may or may not be able to actually incriminate dampness as an important factor which in some way, whether directly or indirectly, may predispose to the prevalence of rheumatic fever. No data have as yet been collected from these communities with regard to crowding, poverty, malnutrition, and the question of streptococcus infections. But it is our hope that by this method information on these other factors may be obtained and analyzed with a view towards gaining more information correlating living conditions and the prevalence of rheumatic fever.

METHODS IN FURTHER CONTROL OF TUBERCULOSIS[1]

REPORT UPON AN EXPERIMENT IN A RURAL AREA CHARACTERIZED BY A LOW TUBERCULOSIS RATE

by JOHN A. KINGSBURY

I

TEN years ago, at the Fourth Conference of this International Union, it was my privilege to participate in a program similar to the present one in its public health importance for the people of the World. On that occasion, the principal problems which we faced were brilliantly analyzed by our distinguished confrere and leader, Sir Robert Philip.

In 1924, Sir Robert asked three significant questions: "Is the antituberculosis movement effecting its purpose throughout the World? Has the antituberculosis movement diminished the toll exacted from the human race by tuberculosis? Is the game worth the candle?" He proceeded in masterly fashion to analyze the mortality records of Great Britain and the United States. And his analysis showed beyond doubt that the answer to each question is affirmative. The antituberculosis movement *is* effecting its purpose, perhaps not throughout the world, but certainly in the countries where it is being prosecuted vigorously, wisely, and persistently. The antituberculosis movement has diminished the toll exacted by tuberculosis, and to a measure which far exceeds the predictions of pessimists and even equals the expectations of many optimists. The game *is* worth the candle, a thousand times over. All this is evident not only to physicians generally and the antituberculosis workers particularly, but to everybody whose sympathy with living beings makes him capable of translating cold, impersonal mortality records into visions of mothers, fathers, and children—the human flesh and blood—saved from the Great White Plague.

[1]Address given before the Ninth Conference of the International Union for the Control of Tuberculosis, held at Warsaw, Poland, on September 4-6, 1934, and reprinted from the Proceedings of that Conference.

II

In the United States, as in many other countries, the first stages of the war against tuberculosis are being won. In 1900, tuberculosis was the captain of the Hosts of Death. Today, it holds seventh place among the causes of death. In thirty-three years, the mortality rate from this disease has decreased by 70 per cent.

Even during the past four years the death rate from tuberculosis has continued to decline in spite of an almost unprecedented economic depression. Although there are some disquieting signs that the disease has increased in certain population groups and in some unusually hard-pressed areas, the tuberculosis mortality rate of our country as a whole has not greatly swerved from its downward course. This is impressive evidence, I think, that the decreasing tuberculosis mortality is not the result solely or even chiefly, as some have said, of improvements in the standards of living due to social progress or economic prosperity. On the contrary, it indicates clearly that specific efforts to combat the disease as an infection are successful despite adverse social and economic trends. The facts in the case demonstrate that public health measures are probably the most important weapons in controlling tuberculosis.

The encouraging results which have crowned the labors of sanitarians offer no valid grounds for diminishing our efforts. We have learned that tuberculosis can be controlled. But we have not yet conquered it. Although in the United States the disease now occupies the seventh place in the list of causes of death of the entire population, it is second only to accidents as a cause of death in those ages when men and women ought to be in the prime of adult life. In certain groups of the population, especially the economically underprivileged and those exposed to special occupational hazards, there is still a shocking wastage of human life. Even under conditions which would

ordinarily be considered favorable, a serious tuberculosis problem must be faced in the adolescent and young adult ages.

As we consider the importance of each major cause of death, we must not be guided only by the *size* of a death rate. Nor should we be guided by the relative ease with which mortality from a particular cause can be reduced. We must give adequate weight to the *social significance* of mortality from each of the principal causes. Deaths from organic diseases of the heart, cancer, nephritis and Bright's disease, cerebral hemorrhage, pneumonia, and accidents exceed the deaths from tuberculosis numerically. But these statistically more important causes operate primarily in ages of life which are not crucial to the structure or the well-being of society. Tuberculosis, however, reaps primarily among young adults and the heads of young families.

We must bear these facts prominently in mind. Directed efforts to save and prolong life must be guided by more than choice of the easiest path or of the largest field. Such efforts should be designed to strike at the most important areas, and importance should be measured socially, not statistically. From this point of view we may recognize that tuberculosis is seventh among the leading causes of death, and yet also recognize that it is among the first of the antisocial diseases.

We are beginning a new campaign in the war against the disease, a campaign in which our objectives must be more definite and our methods more specific than they have been in the past. Great assaults and barrages are no longer suitable. The newer tactics must be adapted to a newer strategy.

Thirty or fifty years ago, the primary problem was lessening the gross ravages of tuberculosis. Today the major task is eradicating the last vestiges of a reduced and partially controlled plague. In each situation, whether dealing with a geographical area or a population group, or an unfavorable condition of work or living, the problem of eradication demands special, intelli-

gent study and the circumstances may require specific methods of attack. The extensive method of the broad campaign is largely outworn; the intensive method of the sharp and pointed campaign is full of promise.

It is my privilege today to tell you of an experiment and an experience with this new system of attack upon tuberculosis. Upon the invitation of the local officials, the medical profession, and others, and with the cooperation of the New York State Department of Health and of various unofficial health and welfare agencies, the Milbank Memorial Fund initiated in Cattaraugus County, a rural section of New York State, a program of public health which, in the judgment of qualified experts, was well-balanced and efficient.

In planning the experiment, the officers of the Fund were guided by such public health statesmen as the late Dr. Herman M. Biggs, State Commissioner of Health and a member of our Technical Board; the dearly beloved Dr. William H. Welch of Johns Hopkins University, who was for ten years Chairman of our Advisory Council; Mr. Homer Folks, Secretary of the New York State Charities Aid Association, who has been both a close student and a practical administrator of antituberculosis work; Dr. James Alexander Miller, Professor of Clinical Medicine of the College of Physicians and Surgeons and a noted authority on tuberculosis; and other distinguished members of our Technical Board and Advisory Council.

Dr. Welch had from the beginning a keen interest in the public health program planned for Cattaraugus County and later in the sound evaluation of the findings. Through his kind offices, the United States Public Health Service agreed to cooperate in studying the epidemiology of tuberculosis and made available to us the services of their distinguished statistician, Mr. Edgar Sydenstricker, who is now a member of the Fund's staff.

The situation which we face today in many rural areas of the United States was anticipated some twelve years ago in a rural

health demonstration. The control of tuberculosis was a major objective of the Cattaraugus County experiment. It happened that in this rural section of New York State, the tuberculosis death rate had long been relatively low compared with many other rural areas in this State and elsewhere. Indeed, the mortality from tuberculosis was very little higher in the years 1910-1915 than that which prevailed in rural New York in the more recent period 1925-1930. Thus the present tuberculosis situation in rural communities generally is similar to that which prevailed in Cattaraugus County some twelve years ago, when the health demonstration was initiated in 1923. An opportunity was afforded, more than a decade ago, to inaugurate intensive anti-tuberculosis measures in a population group much less seriously afflicted with tuberculosis than in rural areas generally.

It is my purpose today to analyze this experiment and to appraise frankly its successes and its failures, as a contribution to the science of public health procedure. We believe—and you may agree—that the lessons drawn from this experiment conducted during the past twelve years will be of value in planning antituberculosis work for the great majority of rural areas which have as yet no real health services worthy of the name.

III

Cattaraugus County may be considered typical of many rural areas in the northeastern part of the United States. It has a fairly stable and homogeneous population of 72,000 persons, mainly of native-white stock, engaged chiefly in small industries and in dairying. Forty thousand of the people live in small villages or on farms, and the remainder in two urban centers of 9,000 and 23,000 respectively. The area of the County is 1,343 square miles. It is relatively prosperous by comparison with rural counties of the middle west and south, having in 1926 an average per capita wealth of about $900. However, many of the people have small means and, judged by American standards, live on a very low economic level. During the course of the

experiment, there have been no important changes in the economic status or in the composition of the population. The people of the County have been seriously affected by the economic depression, but neither more nor less seriously than the people of rural areas generally.

When the campaign against tuberculosis was planned, it was intended that the experiment should provide a test of the results which may be achieved through the intensive application of generally accepted principles in an area where tuberculosis mortality has been relatively low over a long period of years. Early diagnosis, hospitalization, clinic and nursing supervision were to receive adequate emphasis.

We were anxious to test accepted case-finding procedures and, if necessary, to devise new methods specially applicable to a rural area. An effort was made to determine how tuberculosis is disseminated in a rural community and which factors control its transmission.

When the experiment was begun in 1923, a County Health Department was established with bureaus for tuberculosis, other communicable diseases, laboratory services, and visiting nursing. The staff of the nursing bureau included one nurse for every 4,000 persons in the rural part of the County. A county-wide school hygiene program, under the auspices of the school authorities, was initiated in 1923 in cooperation with the County Department of Health. In 1926, a Bureau of Maternity, Infancy, and Child Hygiene, with a whole-time director, was added, and a Bureau of Sanitation was created in 1929.

The following services for the control of tuberculosis have been available:

I. Regularly scheduled diagnostic clinic service, with facilities for X-ray service and tuberculin tests, has been available in all sections of the County to aid in the discovery of positive cases, for periodic re-examination of such cases, and for the examination of all family contacts of positive cases.

II. The consultation services of a specialist in tuberculosis have been available to the physicians of the County at all times, either in their offices, at the clinics, or in the patients' homes. Portable X-ray as a diagnostic aid has been at the disposal of the consultants.

III. Sanatorium facilities have been provided. The capacity of the local sanatorium was increased in 1924 from thirty to fifty beds, the equipment and facilities were improved, and physicians have been urged to suggest sanatorium care for those patients who need institutional treatment.

IV. Visiting nurse service has been constantly available. The nursing staff included fifteen visiting nurses under the supervision of a nursing director and three nursing supervisors. The service is distributed among eight health districts, each staff nurse covering a limited area and devoting a substantial portion of her time to antituberculosis work.

These four services contribute not only to the direct task of discovering cases and furnishing care, but to the indirect function of increasing the physician's awareness of tuberculosis as a community problem and of improving his knowledge of tuberculosis and his diagnostic skill, and of educating the public on means of controlling the disease.

Popular health education has been conducted through the newspapers, the distribution of popular health literature, and through lectures and motion pictures. These educational media have stressed the importance of early diagnosis and the annual health examination, and have otherwise attempted to educate the people. In addition, the program included a plan for social welfare to secure adequate economic relief for the tuberculous families. A staff of three social workers was organized and their work was closely correlated with that of the public health nursing service.

IV

The results which have been achieved may be reviewed only briefly. First, I would report upon the extension of sanatorium

care. During the six years before the experiment was begun (1917-1922), the average annual number of patients treated in the institution was sixty-four; during the last six years (1928-1933), the annual average was 105. The average number of minimal cases treated annually has slightly more than doubled, twenty-six in the later period compared with twelve in the earlier. Even more significant is the fact that at the end of 1933 there were known to be forty patients with positive sputum in the County, and of these thirty-five were (or had been) in sanatoria. During the year 1933, twenty-five new patients were found to have positive sputum and twenty-two of these were in sanatoria at the end of the year or received sanatorium care during the year. Institutional care, utilized especially for the positive sputum cases, undoubtedly has had and will continue to have far-reaching effects in reducing the dissemination of tubercle bacilli in the community.

Careful home supervision has been afforded all patients with active or quiescent disease who did not wish to accept or did not require sanatorium treatment. This supervision has been carried out by the public health nurse in cooperation with the practicing physician. Emphasis has been placed upon bed rest, well balanced and adequate diet, and "fresh air." The patient and the family have been instructed on the dangers of infection and the importance and the means of observing sanitary precautions. The nurse has advised and assisted the family when adjustments in family life have been necessary to relieve the patient of physical and mental strain. Effort has been constantly made to keep the family as a unit and to minimize the spread of infection even though the patient remained at home for care and treatment.

V

The first requisite of a modern program for the prevention and control of tuberculosis is location of the foci of infection or the finding of the cases of disease. The generally accepted meth-

ods of case-finding have been: (1) The examination of family contacts, especially child contacts, of cases known through the case and death records and the examination of suspects referred by the public health nurses; (2) the examination of individuals referred by physicians for diagnosis; and (3) the examination of children of school age and other special population groups.

All of these procedures have been used in Cattaraugus in an effort to ascertain the method most effective in a rural area.

No records of tuberculosis cases or death were available earlier than for the year 1914 and, for the most part, the existing records were incomplete. For example, in 1914 there were recorded fifty-five deaths and only seven cases. However, such records as were available were utilized in a case-finding survey started in 1923 among families known to have had a tuberculosis case or death. During 1924, 2,434 persons were examined in the diagnostic clinics, and 249, or 10 per cent, were found to be tuberculous. This represents in part a round-up of the old cases in the County. Nevertheless, 106 of the 249 were new cases showing active clinical tuberculosis. Since then, the number of new persons examined in the clinics each year has varied from 700 to 1,100 with approximately 13 per cent diagnosed in each year as tuberculous.

The examination of the family contacts of recognized cases has been a major activity; and special emphasis has been placed upon the examination of children in the tuberculous families. In concentrating efforts upon the control of tuberculosis in childhood, we have been following the advice given to us in 1907 by Sir Robert Philip when we were designing an earlier experiment under the auspices of the New York State Committee on Tuberculosis and Public Health, and have been adhering to the dictum which Sir Robert laid down before this International Union in 1924: ". . . . give especial care to the child as the potential seedling of tuberculosis."

At the end of 1931, there were 314 cases of tuberculosis car-

ried on the current roster. These cases either were active or had recently been active. Seventy-three per cent of the 396 contacts under age twenty, and 59 per cent of the 429 contacts over age twenty were examined in the diagnostic clinics.

The role of the practicing physician in the discovery of cases cannot be too greatly stressed. He should be instrumental in securing prompt and early diagnosis of tuberculosis by referring to the diagnostic clinics all those who come under his care and show suspicious signs. He should assist also in securing the examination of family contacts. The increasing cooperation of the physicians in Cattaraugus County is shown by the fact that the cases which they have referred to the clinics have increased from 14 per cent of the total clinic cases in 1923 to an average of 40 per cent during the period 1928-1932.

The practicing physicians have been the most fruitful agency in locating the significant cases. Two hundred and ninety cases were diagnosed during the five-year period 1928-1932; 57 per cent of these were referred by physicians, 32 per cent (mainly family contacts) by public health nurses, and 11 per cent by all other agencies. Moreover, the diagnosed cases referred by physicians have yielded 77 per cent of all cases of adult pulmonary tuberculosis. Excluding the cases of childhood tuberculosis (primary infection) discovered during the five-year period, among the cases referred to the clinics by physicians, one in each nine was found to be tuberculous, but among the cases referred by nurses only one in each forty-five was found to be tuberculous. It is therefore clearly evident that the practicing physicians in the County refer to the clinic a highly selected group of individuals for the diagnosis of significant infection.

The findings may be expressed more forcibly in terms of cost of diagnosis. The examination of cases referred by practicing physicians cost $22.92 per positive diagnosis; the cost for cases which were referred by public health nurses was $45.95 per positive diagnosis; and for cases from all other sources, $115.18.

Emphasis is now being placed upon the examination of special population groups which may contain apparently well persons who are disseminating the disease. Special surveys of school children and of adults, mainly in rural parts of the County, have revealed a low rate of infection and disease. In 100 village and rural schools, 9.3 per cent of 1,308 children were found positive to tuberculin (Mantoux). In an urban area, only 18 per cent of 400 children (ten to nineteen years of age) gave positive reactions. Relatively few of the positive reactors showed evidence of primary infection (well calcified), and no active clinical cases of tuberculosis, either primary infection or adult pulmonary type, were found. Some 840 persons of whom 55 per cent were twenty years of age or older, drawn mainly from farm families, were given careful X-ray examinations. One clinical case of active tuberculosis was discovered in this group, and this case was already under the care of a physician though unknown to the Health Department.

These findings indicate small returns for large expenditures of energy and money. We therefore conclude that the examination of such population groups (without prior selection in respect to probable exposure to infection) is not an efficient procedure for the discovery of cases in a sparsely settled rural area where opportunities for contact with tuberculosis are limited.

These case-finding surveys conducted in the rural parts of the County and in one urban area have demonstrated that the prevalence of tuberculous infection is low in Cattaraugus County. Even among the children examined in the regular diagnostic clinics during the past six years, 75 per cent of whom were urban and 10 per cent of whom had been exposed to positive sputum in the home, the prevalence of infection has averaged only 16 per cent. Among those under sixteen years of age who were not known to have been exposed to positive sputum in the home, the prevalence of infection has declined from 19 per cent in 1928 to 3 per cent in 1933. Dr. John H. Korns, director of the Bureau

of Tuberculosis, has estimated that among those who are under nineteen years of age in the entire population of the County, 12 or 13 per cent are infected.

The lessons from these experiments in case-finding are clear. The facts which have been uncovered lead to the following administrative policies for the control of tuberculosis in rural areas:

1. Seek the cooperation and interest of the practicing physicians in the early diagnosis of tuberculosis.
2. Provide an adequate clinic and consultation service throughout the area.
3. Emphasize the need for examination and medical supervision of all persons, adults and children, known to be in contact with positive sputum cases.
4. Prevent the further spread of tubercle bacilli in the community by the hospitalization of all positive sputum cases as promptly as possible and until they are sputum-negative.
5. Search for the unrecognized foci of infection through the examination of a limited circle of contacts to each case rather than by a general survey of entire population groups.

VI

An experiment conducted over ten years is not ready for final evaluation. Nevertheless, provisional conclusions emerge from the records.

The experiments in case-finding and in the improvement of the technique of diagnosis have resulted in the discovery of many healed and latent cases. For example, in 1924, 249 cases were diagnosed, and of these 57 per cent were classed as healed cases of tuberculosis; in 1933, 116 cases were diagnosed and 66 per cent were healed. A careful check of these cases is made each year, and with special attention to those among persons who are under twenty years of age and who show X-ray evidence of latent primary infection. So far, none of the cases showing healed tuberculosis on first diagnosis has become active; practically all of the individuals are well and working. Consequently,

the present policy of the Bureau of Tuberculosis is to concentrate upon the active or recently active case.

If the supervision of family contacts has been effective in the prevention of repeated infection, there should appear a decline in the number of active cases. The high point in the discovery of active cases was reached in 1924 when there were 106. Since then, the number of new cases reported each year has fallen from sixty-eight in 1925 to forty in 1933, as shown in Table 1. The decline in the number of new active cases is all the more significant because it has occurred in spite of increasingly intensive efforts to find new and unknown cases.

Table 1. New active cases of tuberculosis reported in each year in Cattaraugus County, 1923-1933.

Year	Number of Active Cases
1923	46
1924	106
1925	68
1926	65
1927	67
1928	65
1929	56
1930	38
1931	60
1932	50
1933	40

Furthermore, there has been a marked improvement in the reporting of active cases of minimal tuberculosis. In 1923 and 1924, from 15 to 20 per cent of the total active pulmonary cases reported were classed as minimal (including primary infection). Since 1924, from 28 to 42 per cent of the total cases have been diagnosed in the minimal stage. The significance of this change hardly needs comment since the importance of discovering tuberculosis in the minimal stage, in order to make treatment and preventive work effective, is generally accepted.

Early reporting of tuberculosis is important both in respect to supervision of the case and the protection of those in contact with infected persons. Any serious neglect of this activity will be reflected in the tuberculosis mortality.

VII

A classification of the tuberculosis deaths which occurred during the period 1926-1933, divided according to the length of time the case was known before death occurred, is shown in

Year	Total Deaths	Length of Time Case was Known					
		After Death		Less Than 6 Months	6 Mos. but Less Than 1 Year	1–3 Yrs.	3 Yrs. or Longer
1926–1929	127	35	32[1]	31	10	29	22
1930–1933	102	27	16[1]	26	8	16	25

[1]Excluding death of nonresidents.

Table 2. Tuberculosis deaths, showing extent of time between the reporting of the case and death, Cattaraugus County, 1926–1933.

Table 2. Increased use by nonresidents of hospital facilities located in Cattaraugus County somewhat obscures the fact that there has been an improvement in the reporting of cases before death. If we exclude deaths of nonresidents who appear in the records as terminal cases only, the number of tuberculosis deaths in which the diagnosis is made at termination for the four years 1926-1929 is thirty-two, compared with sixteen for the more recent period 1930-1933. The decrease is no doubt largely due to an improvement in the cooperation of the practicing physicians in reporting cases.

From five to ten cases in each year were known less than six months before death. This group is largely composed of those who wait until they are seriously ill with tuberculosis before seeking medical treatment. No substantial improvement in the early reporting of fatal cases is indicated by the records. Since almost one-third of the total deaths in each year are in this class, we recognize the existence of a serious problem for which a solution must be found, lest the present program remain limited in its effectiveness.

VIII

The further evaluation of the Cattaraugus experiment carries us into a study of the trend of mortality from tuberculosis. We must ask the question: Have the directed efforts effected a reduction in the death rate? A suitable control area is not available for comparison. However, the period prior to the beginning of

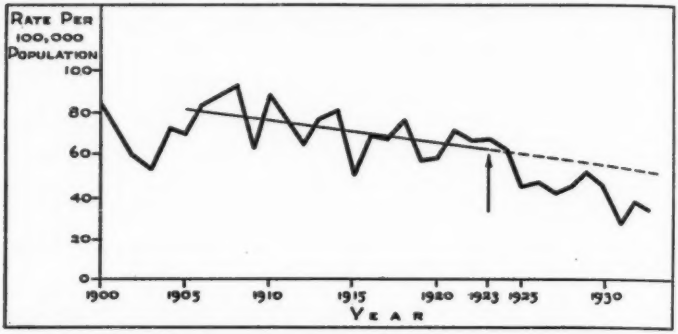

Fig. 1. Mortality from tuberculosis in Cattaraugus County, 1900-1933. (Excluding Indians and nonresidents dying at the J. N. Adam Memorial Hospital, Perrysburg.)

intensive antituberculosis work may be compared with the later years.

The tuberculosis mortality in Cattaraugus County (Figure 1) has been relatively low for thirty years or more. According to the United States Census enumerations, even as long ago as 1880 and 1890 the death rates from "consumption" were only 132 and 108, respectively. Furthermore, before 1924, there was only a slight tendency for the death rate to decline, as is indicated by the fitted trend line in Figure 1. Since 1923, the tuberculosis death rate has declined from an average rate of 66 per 100,000 during the five years 1920-1924 to 39 per 100,000 during 1929-1933. This decline of 41 per cent represents a significant departure from the expected trend, as is clearly shown in Figure 1. Attention may again be called to the fact that the decline has continued despite economic recession.

Perhaps of even greater significance is the fact that the decline in tuberculosis mortality in Cattaraugus County has taken place largely in the early ages of life where the death rate has been comparatively high. The average annual rates in each period during 1916-1924 are compared with the corresponding rates during 1925-1933 in Figure 2.

The mortality among children under five years of age is slightly higher in the later than in the earlier period, but the number of deaths in this age period is very small and the change can hardly be considered significant. On the other hand, a very marked improvement in the mortality of children and adolescents has occurred, the decrease at ages 5-9 being 79 per cent and at ages 10-19, 53 per cent. A 52 per cent decrease in the mortality for the age period 20-29 is especially significant because the mortality rate was highest in these early adult years during the pre-experimental period. With increasing age, the relative decrease in mortality declines until, at sixty years and over, some increase appears.

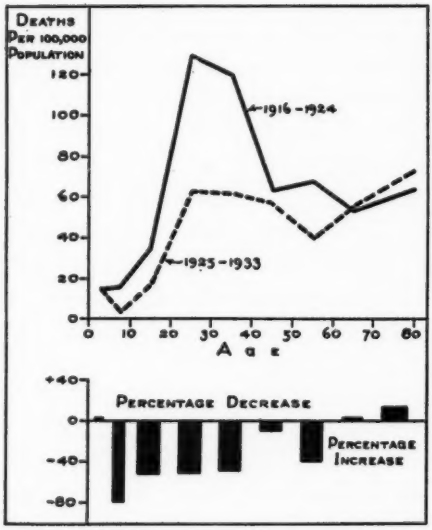

Fig. 2. Mortality from tuberculosis in Cattaraugus County by age groups, 1916-1924 and 1925-1933. (Excluding Indians and nonresidents dying at the J. N. Adam Memorial Hospital, Perrysburg.)

The mortality records confirm the judgment formed from the morbidity records, that antituberculosis work in Cattaraugus County has been effective in the partial control of the disease.

IX

In this brief report I have only attempted to present an aeroplane view of the procedures which have been followed and the results which have been achieved in this experiment. From more complete study of the records than I can review here, we are

warranted in concluding that the program of tuberculosis control in Cattaraugus County has had certain positive results. The intensive search for cases of active disease, the hospitalization of positive sputum cases, the protection of the family through clinic examination and the educational work of the public health nurse, the increased cooperation of the practicing physician, all have contributed in effecting a decrease in active cases of disease and a substantial reduction in the mortality from tuberculosis. The study of methods of case-finding in this rural area has clearly demonstrated the fact that we cannot depend entirely upon *a priori* methods, but must seek those which give practical results in a given area.

It appears evident that as morbidity and mortality from tuberculosis decline, case-finding becomes more and more an epidemiological problem and requires diligent and painstaking search for the source of infection of each case.

Cattaraugus County has served as a field laboratory. We know of no comparable experiment. We commend it to your interest and invite your comments and criticism. Certain specified objectives have been achieved; we hope to achieve others. We dare even to hope that our undertaking will serve as a challenge to sanitarians in other communities and in other countries and that they will be stimulated to newer and more effective means of controlling or even eradicating tuberculosis.

The value of this experiment in public health administration rests not merely in the fact that tuberculosis mortality and morbidity have been decreased, but also in the fact that accepted methods of control have been tried and tested and that new methods are being invented according as the need arises. We are confident that in this experimentation we shall forge new and powerful weapons for our armamentarium against tuberculosis in a rural area.

The United States is in itself a vast country and even its rural parts are heterogeneous and diverse. We are fully aware that

public health procedures developed in one community may not be entirely applicable in another. Furthermore, the procedures in tuberculosis control which may be effective in the United States may not be completely serviceable in another country. Nevertheless, the epidemiology of tuberculosis has common characteristics everywhere, and the principles of effective public health administration are substantially the same in all progressive countries. The lessons which are being learned in Cattaraugus County will contribute to the further conquest of tuberculosis in rural areas of the United States. We trust they will receive application in other countries as well.

In addition to the specific lessons which flow from the Cattaraugus experiment, there are certain broad implications which should be recognized. Within a few years after our antituberculosis program was undertaken, it became evident that this project could not be carried forward *sui generis*. An attack upon tuberculosis involves public education in healthy living; it requires visiting nurses to deal intimately with the needs of the people of the community; it calls for institutional facilities and for coordinated relations with other activities in both the prevention and the cure of disease. Perhaps more than any other communicable disease, the control of tuberculosis challenges preventive medicine on all fronts. Education, prevention, diagnosis, and cure are all involved.

Obviously, an effective campaign against this disease must be an integral part of a general public health movement. No such directed effort as the problem requires can be made where public health administrative machinery is lacking or deficient. In the United States it is still unfortunately true that most of our rural areas are without local public health administration worthy of the name. Even in 1932 there were less than 600 counties with whole-time county health officers in a total of over 3,000 counties. And there were only three or four counties with such health departments as modern public health science dictates.

If the Cattaraugus experiment teaches us anything, it teaches us that an effective campaign against tuberculosis in rural areas can only grow apace with a substantial movement for efficient public health practices in rural areas generally. Tuberculosis must continue to be—as it long has been—the rallying point around which we design and build the essentials of a program for preventive medicine and the conservation of public health.

A PROJECT IN RURAL SCHOOL HEALTH EDUCATION

by RUTH E. GROUT

IV. RELATIONSHIPS WITH COMMUNITY HEALTH PROGRAMS[1]

ONE of the functions of the school health education project in Cattaraugus County has been to assist, whenever possible, in bringing about an interchange of services and a close articulation of purpose between all agencies which have some contribution to the physical, mental, and social well-being of rural school children. In this article consideration will be given to some of the inter-relationships that exist between the school health education program and community agencies which reach both the child and his home. The outstanding groups and their activities in relation to the schools are listed in Table I. This in no way is presented as a model program but rather as a progress report of procedures which are being developed experimentally in a specific situation as opportunities arise.

A most important aid in bringing about a mutuality of purpose between groups in Cattaraugus County has been the centralization of headquarters of many official county health and social agencies at the Bartlett Memorial Community Center in Olean. This building, formerly a large private residence, was given to the County by a public-spirited citizen a few years ago. In it are located the offices of the County Health Department, the County School Health Service, a branch office of the County Welfare Department, the Catholic Charities, the American Red Cross, the Boy Scouts of America, and the Camp Fire Girls. Here, too, the director of the school health education project has her office in conjunction with the County School Health Service.

[1]From the Cattaraugus Supervisory School Hygiene District and the Division of Public Health Activities, Milbank Memorial Fund. This is the fourth in a series of papers by the director of the health education study in Cattaraugus County.

Table 1.

LOCAL AGENCIES AND HEALTH SERVICES THEY PROVIDE IN THE RURAL SCHOOLS OF CATTARAUGUS COUNTY

(Exclusive of Official Educational Agencies)

AGENCY	SERVICES TO RURAL SCHOOLS	MECHANICS FOR BRINGING SERVICES IN CONTACT WITH SCHOOLS
I. Medical Inspection of School Children	1. Part-time locally employed physician inspects each child annually according to State law	Local trustee selects medical inspector and makes financial arrangements with him
II. County Dept. of Health		
1. County Commissioner of Health	1. Immunization against disease	At request of community through nurse
	2. Control of communicable disease	Visits schools or homes as needs arise, often at request of teacher, trustee, or superintendents
	3. Advisory services on individual health problems such as disease control, et cetera	At request of teachers or others
2. Public Health Nurse	1. Assists with medical inspection in her district	Makes direct arrangements with medical inspector and teacher for schedule of inspection visits
	2. Control of communicable diseases as agent of the County Commissioner of Health	Visits school or home on request of County Commissioner of Health, teacher, trustee, or superintendent
	3. Assists in securing the correction of physical defects	Works in cooperation with family physician, parent groups, and welfare workers
	4. Interprets school problems to the home and vice versa	Through home and school visits
	5. Advisory services on individual health problems	Through home and school visits
3. Sanitary Engineer	1. Inspects water supplies	May be at request of superintendents, teacher, trustee, or others
	2. Advises on sanitary improvements	May be at request of superintendent, teacher, trustee, or others
4. Director of Bureau of Tuberculosis	1. Clinical and X-ray examination of suspected cases of tuberculosis	At request of physician, nurse, or others
	2. X-ray examination juniors and seniors in high school	On permission of local school board
5. County Laboratory	1. Bacteriological examination of water samples	Routinely and on special request
1. *Director of County School Health Service*	1. Provides link between health and education department. Assumes responsibilities and directs policies for all health work in schools	Works through existing agencies in direct contrast with schools such as medical inspector, nurse, superintendent, director of health education, et cetera

4. Director of Bureau of Tuberculosis	1. Clinical and X-ray examination of suspected cases of tuberculosis	At request of physician, nurse, or others
	2. X-ray examination juniors and seniors in high school	On permission of local school board
5. County Laboratory	1. Bacteriological examination of water samples	Routinely and on special request
1. Director of County School Health Service	1. Provides link between health and education department. Assumes responsibilities and directs policies for all health work in schools	Works through existing agencies in direct contrast with schools such as medical inspector, nurse, superintendent, director of health education, et cetera
	2. Keeps all school health records in central office. Sends annual reports to State Education Department	Summaries of reports used to promote further activities in schools
2. Director of School Health Education Project	1. Acts as consultant on school health education program	Through personal and group contacts with teachers, district superintendents, nurses, parents, and others
	2. Assists in curriculum building with special emphasis on health	Same
	3. Assists in unifying all health work in schools	Same
IV. County Welfare Department	1. Relief program for needy individuals. In a few instances helps to provide lunches for needy school children	Largely through assistance to family
	2. Child welfare work including arrangements for child guidance clinics	At request of teacher, nurse, and others
V. Catholic Charities	1. Relief program for needy individuals	Largely through assistance to family
VI. Boy Scouts of America	1. Sponsors formation of scout troops	Contact of leader with individuals in community
VII. Camp Fire Girls and Blue Birds	1. Sponsors formation of groups of girls	Contact of leader with individuals in community
VIII. County Tuberculosis and Public Health Association	1. Provision of educational material related to control of tuberculosis	Individual contacts of secretary with health education director, teachers, and community
	2. Special services in community education such as preparing lists of health books in County libraries	In conjunction with school education program in general
IX. Home and Farm Bureau	1. Advisory and promotional services in relation to food and nutrition, gardening, and other home and farm activities	Through general educational program. Special help at request of teachers, health education director, and others
X. 4 H Club Work	1. Club meetings and projects to promote homemaking and agriculture	Limited to sections where high school teachers organize clubs in vicinity of their schools
XI. Parent-Teachers Associations Mothers' Clubs, Granges, Etcetera	1. Support school programs in general and provide for such specific needs as hot lunches and defect corrections	Contribution of funds, community education, and other services

A narration of what actually transpired during a recent busy Saturday in the office of the director of the school health education project may present a more vivid picture of the link that exists between the health educational program and other groups than a series of generalized statements. During the week previous to this particular day the director had visited schools in the rural areas to assist teachers in their health education programs and had met with numerous problems requiring specialized services.

The director of public health nursing, who, with her staff gives part-time services in the schools, first is consulted. Has she heard of Mary J. in Hunter's Hollow whose eyes tested 20-70 in the teacher's preliminary examination? The teacher wishes further investigation by the local county public health nurse and is anxious to know whether financial assistance for securing glasses will be available this year. Then, too, Miss Smith on Bear Hill has a problem child whom she wishes to send to the child guidance clinic for observation. It already had been suggested to the teacher that she ask the local public health nurse to assist her in making arrangements for sending the child to the clinic. To hasten matters this case is being reported to the director of nurses. Miss Green, at Gary Corners, who is working on a first-aid project with her pupils has asked for a list of materials for a home-made first-aid kit. Such a list, which previously had been prepared by a nurse, is placed in the mail for Miss Green today.

Fulfilling a promise to consult the sanitary engineer, the director reports to him some leaking septic tanks in a school on the Seven Mile. This interest of the pupils in finding out and correcting the trouble has led to a study of safe water supplies in a farming area. What can the sanitary engineer do to help?

The director of maternity, infancy, and child hygiene has been responsible for making a collection of some excellent home-made toys and preparing directions for their construction. These

are just what Miss Brown wants to use with her pupils and their older brothers and sisters in a community-construction project. So today the direction sheets and a booklet on home-made play materials from the extension division of the State College of Home Economics are mailed to Miss Brown.

Plans must be furthered during this brief sojourn in the office for organizing a series of discussion groups on school health problems for which approximately seventy rural teachers in various sections of the County already have signed. This morning permission is obtained from the County Commissioner of Health to use the district health station in Salamanca for one conference group. Letters are mailed to teachers announcing the conference and the news that a state supervisor of health education will meet with the group on that day. Another group has secured a state supervisor of parental education and child development as a leader for its monthly discussions. Announcements to this effect were mailed to teachers on the previous day.

During the course of the morning under consideration several requests are received for the services of the director. The secretary of the County Tuberculosis Association would like copies of a speaker's list which the director helped to prepare for the district parent-teacher association in her capacity as its health chairman. She also would like the director to write an article for the news letter of a woman's organization summarizing a speech given at their annual meeting in the spring.

A representative of an out-of-town parent-teacher association makes a personal call at the suggestion of a Home Bureau agent to invite the director to speak before her organization during the following week. By mail comes a request for assistance in organizing a health education program in a city of a neighboring state, while in the same mail is a letter from a southern state acknowledging with enthusiasm some health educational material, prepared by Cattaraugus County teachers, which has proved valuable to teachers in that state.

Although this is the usual manner in which daily problems involving one or more agencies are met, from time to time more unified efforts to meet some special problems are carried out.

One of the early projects in which several groups participated was a study of lighting conditions in over thirty one- and two-teacher schools, selected because of unusual lighting problems. The survey was based on the standard code of school lighting, sponsored by the Illuminating Engineering Society, and was made by a technical expert from a local power concern with the aid of a light meter. On each school visit the expert was accompanied by a district superintendent, the county sanitary engineer, or the director of the county school health education project.

After observations were made in a school, recommendations for improvements were discussed with teachers and pupils. A modified survey sheet along with a sample teaching unit on the care of the eyes was left in each school, with the suggestion that the teacher use them in her educational program. Later a summary of the complete study was prepared and distributed to interested individuals.

This study helped to emphasize the frequent inadequacies of rural school lighting. In one school, after the children had made the proposed lighting survey they passed the findings to the trustee, who in turn took up the problems with his community at the annual school meeting. This resulted in the redecoration of walls and ceilings and a better arrangement of seats. In nearly every school that was studied some improvement followed, such as installation of new windows, shades, or electric lights; redecoration of the room; rearrangement of seats; or trimming of trees. Moreover, there are evidences that the survey also gave fresh impetus to bettering conditions in many other rural schools of the County.

Another quite different cooperative activity was a panel discussion given during the past year at a county-wide meeting of rural teachers on the invitation of the district superintendents.

The subject of the panel, "What are the most desirable ways of teaching health in rural schools of Cattaraugus County so that health habits will be lived and not just talked" was discussed from several angles. The field of education was represented by the principal of a neighboring normal school and three rural teachers; the parent and home by a former teacher who is now a parent; and the field of health by the County Commissioner of Health, the director of public health nurses, and the consultant in health teaching from a tuberculosis association in a neighboring county. The director of the county school health education project acted as chairman. Opportunity was given the teachers at the end of the discussion to raise questions and to voice their own opinions.

It was felt that this panel discussion not only helped the teachers and the individual participants to orient their thinking on a mutual problem but also conveyed to teachers a sense of strength and unity of purpose among those responsible for promoting the health of the rural child.

Since nutrition of rural people has been a primary concern in Cattaraugus County, as elsewhere, a group of county leaders in the spring of 1934 informally decided to attempt the preparation of a nutrition sheet with local significance. The *Farm and Home News Bureau News* was selected as the most natural vehicle for the sheet, which would have as its general theme the appreciation, development, and utilization of local food resources and which would be directed toward persons who, despite adversities, still are amenable to encouragement and help.

Several conferences to determine the nature and content of this food and nutrition supplement to the *News* were held by a committee consisting of the County Home Bureau agent, the director of the public health nurses, the assistant to the Commissioner of Public Welfare, and the director of the county school health education project. Among those consulted for advice was a representative from the State College of Home Economics.

Articles finally contained in the supplement included a comparison of chick- and child-feeding written by the Home Bureau agent, after an interview with a farmer who is a successful poultry raiser and at the same time a successful father; a story about a health camp boy, written by the secretary of the County Tuberculosis Association; an inspirational yet practical article on a family vegetable garden, contributed by a Farm Bureau agent; a description by a principal of a successful hot-lunch project in a village school; a summary of a community-planning program for agricultural rehabilitation, proposed by a local farmer; and a statement released by the County Welfare Department concerning the provision of free seeds and fertilizer to those in need.

These sheets were distributed to members of the Home Bureau, teachers, and many individuals reached by the public health nurses and other county workers. Tangible results from such an undertaking are difficult to discern. Regardless of its effect on the community, there was a concensus of opinion that the enterprise helped to bring about a greater solidarity among the community leaders who took part.

When the annual school reports were summarized during the summer of 1934 it was discovered that only 58 per cent of the village and rural schools in the County made provisions for hot lunches for their pupils. Although this was a gain of 10 per cent over the previous year it was obviously not an optimum condition. Consequently it was decided to renew efforts during the present school year to increase the quantity and quality of hot lunches in these schools. Lists of all schools failing to serve hot lunches during the school year 1933-1934 were taken from the records in the office of the County School Health Service and sent to the superintendents and nurses in the areas concerned. During personal visits to these schools, nurses, superintendents, health education director, and others have discussed the problem with teachers.

Literature on hot lunches, prepared both locally and by the State Education Department, has been given to teachers on request. At teachers' meetings, grange and parent-teacher gatherings, various individuals have presented the problem from its different angles. Upon the instigation of the County Home Bureau agent at least two Home Bureau units are sponsoring hot lunches in their districts. One group is assisting in the preparation of the lunches at school. A mother's community club is taking active part in planning and serving hot lunches in another district. In a few instances the town welfare officer has been approached to help children from families under relief. It is too early to learn the results of this movement, but greatly improved conditions are indicated.

The project in rural school health education has not limited itself entirely to contacts with groups inside the County. The advisory services of state and national organizations, both official and nonofficial, have been indispensable in the growth of the program. The normal schools in the vicinity of the County, which increasingly are stressing rural school problems in their courses, have shown an interest in the project. With the assistance of the State Education Department, a teaching guide, prepared by teachers in Cattaraugus County, is being given further trial in another county of the State. Although the program has been built entirely with local needs in mind, there are continual requests coming to the office from all sections of the country for assistance in planning programs and for educational materials developed by the teachers.

A beginning has been made in Cattaraugus County toward unifying health and educational activities to assure a well-rounded program both for the rural school child and for the community as a whole.